

University News

A FORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH JULY 15, 1980



Indian contingent for the Moscow Olympics with Prime Minister, Smt. Indira Gandhi, in New Delhi.

CLASSIFIED ADVERTISEMENTS

HIMACHAL PRADESH UNIVERSITY

Recruitment Branch
Simla-171005.

Advertisement No. 4/80.

Applications on a plain paper, (duly typed in the proforma given below) under registered cover, alongwith a crossed Indian Postal Order of Rs. 10/- (Rs. 5/- for S.C./S.T.) payable to the Finance Officer, Himachal Pradesh University, Simla-171005 are invited for the following posts so as to reach the undersigned on or before 9th August, 1980:

I. Professors in the following subjects:

Education-1 (Plan post likely to continue), Hindi-2, Economics-1 (Leave Vacancy likely to continue), Business Administration-2 (One post leave vacancy likely to continue and one Plan post likely to continue), Chemistry-1 (Specialisation: Organic Chemistry) and Political Science-1.

II. Readers in the following subjects:

Sanskrit-1, Business Administration-2 (Plan posts likely to continue), English-1, Music-1, Economics-2, Bio-Sciences-1 (Leave Vacancy) (Desirable Specialisation in Zoology), Political Science-2, Laws-3 (Desirable Specialisation in the field of Criminal and Constitutional Law), Linguistics-1 for Centre of Post-graduate Studies and one each in Hindi, Education, Political Science, Economics, English, History, Sanskrit and Commerce for Directorate of Correspondence Courses.

III. Lecturers in the following subjects:

Physics-5, Hindi-3, English-2, German-1 (Plan post likely to continue), Bio-Sciences-4 (2 Plan posts likely to continue and 2 posts on leave vacancy) (Desirable Specialisation in Cytogenetics/Invertebrate Morphology/Cell Biology/Animal Physiology/Parasitology), Chemistry-1 (Specialisation in Physical Chemistry), Psychology-2 (Desirable Specialisation in Psychometrics/Child Psychology/Clinical Psychology/Personality), Sanskrit-2 (Desirable Specialisation in Veda or Vyakarana or Darshana) and Economics-2.

FOR H. P. UNIVERSITY
EVENING COLLEGE
Lecturers in Hindi-2

ESSENTIAL QUALIFICATIONS AND PAY SCALES

- I. For Professors: (a) Master's degree of an Indian University with atleast 50% marks in aggregate or an equivalent qualification of a foreign University

in the subject or in an allied subject;

(b) Either a research degree of doctoral standard or published research work of high standard;

(c) About ten year's experience of teaching Post-graduate classes and/or research; and

(d) Experience of guiding research at Doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge in the discipline concerned.

Pay Scale: Rs. 1500-2500.

- II. For Readers: (a) Master's degree of an Indian University with atleast 50% marks in aggregate or an equivalent qualification of a foreign University in the subject or in an allied subject;

(b) Either a research degree of doctoral standard or published research work of high standard;

(c) About 5 year's experience of teaching Post-graduate classes and/or research; and

(d) Competence to guide research. (Evidence of being engaged in making innovation in teaching methods and production of standard teaching material, will be an additional qualification).

Pay Scale: Rs. 1200-1900.

- III. For Lecturers: (a) A doctor's degree or published work of an equally high standard; and (b) Consistently good academic record with atleast 50% marks in aggregate in Master's degree in the subject concerned or in an allied subject or an equivalent degree of a foreign University.

Provided that the Executive Council may, if necessary, relax any qualifications at (b) above on the recommendations of the Vice-Chancellor or the Selection Committee, as the case may be, if the research work of a candidate as evident either from his thesis or from his published work is considered to be of a very high standard;

Provided further that a candidate possessing a consistent good academic record may be appointed, if a candidate with qualifications at (a) above is not available or is not considered suitable, on the condition that he will have to attain the required qualifications within five years of his appointment, failing which he shall not earn future increments until he fulfils the conditions.

Pay Scale: Rs. 700-1600.

NOTE: In all cases preference will, however, be given to the candidates having qualifications in the subject concerned.

Candidates already in service should send their applications through proper channel. An advance copy may, however, be sent direct.

Candidates called for interview will have to come to the place of the interview at their own expenses and bring with them their original research papers, degrees and certificates etc. for verification.

The University reserves the right to negotiate with suitable person or persons, if necessary, who may not have applied formally.

The University also reserves the right to fill up or not to fill up the posts or to call only Selected Candidates for interview. The number of posts likely to be filled may vary.

Candidates are required to give the following particulars:

1. Name of the Post;
2. Name of the applicant (In block letters);
3. Date of birth;
4. Address for Correspondence;
5. Province of Domicile;
6. Academic qualifications: giving division and percentage of marks in each examination from high school onwards: (Attach attested copies of all the degrees/certificates).
7. Teaching Experience with detail of: Post held, name of the Institution, period with date and last pay drawn: (Post-graduate and Under-graduate teaching experience is to be shown separately).
8. Research work and experience of research guidance. Number of students guided in each programme;
9. Papers/Books/Articles published, if any: (List to be enclosed).
10. Minimum Salary Acceptable;
11. IPO No.(s)..... date.....

(MONEY ORDERS OR CHEQUES ARE NOT ACCEPTABLE).

12. Any other information worth mentioning, not covered above; Signature of the Candidate with date;

NOTE

- (i) Applications not in conformity with the above requirements and applications received after the due date will not be entertained, and no correspondence will be entertained in this regard.
- (ii) A person applying for more than one post should send a separate application for each post.
- (iii) Persons who have already applied for the above mentioned posts in response to our earlier advertisements need not to apply again. However, they may send additional informations, if any.

K. D. Gupta
REGISTRAR

UNIVERSITY NEWS

Vol. XVIII

JULY 15

No. 14

1980

A Fortnightly Chronicle Price
of Higher Education 80 Paise

IN THIS ISSUE

Priorities in Educational Planning	379
University Education in India : Past & Present	382
Problems of Undergraduate Courses	386
Campus News	
Kidwai's advice to Bihar VCs	387
PAU's new building for soils department	388
Microcomputers	388
Madras orientation course in English language	389
World Bank doubles lending for education	389
Patna to revive moderation system	390
Examination innovation at Bhavnagar	390
Bombay plans new study courses	391
Osmania builds a film library	391
JNTU entitled for UGC grant	391
Theses of the Month	393
Additions to AIU Library	395
Classified Advertisements	396

Opinions expressed in the articles and reviews are individual and do not necessarily reflect the policies of the Association

Editor : ANJINI KUMAR

Hundred Years of Science and Technology

Raja Ramanna

In any commentary on Indian science from a historical point of view, it is impossible not to make some references to the intellectual wealth contained in the ancient writings of this country.

By a series of accidents I chanced to read some of our 'Puranas' and I must say I was amazed at the sharp, prespective and questioning approach of the writers of these old works. They have everything that is required for developing a great scientific culture. It must also, however, be admitted that in these great writings themselves there are signs of decay, superstition and downright foolishness and we seem to have chosen the latter.

The Indian National Science Academy by its efforts in the past few years has shown that scientific tradition never actually died out of India and was in fact quite active even in the Muslim period and right up to very recent times. There is considerable literature on the mathematical contributions of India in the past but very few know of the contributions in chemistry, medicine, engineering and other aspects of technology.

What concerns me here is the background that existed in the 19th century in order to explain the quick absorption of science in the country in spite of its backwardness at that time.

Elite teaching centres are part of the Indian tradition and it is remarkable how this background proved a fertile soil for accepting modern science, as introduced by the West, in the 18th and 19th centuries.

Much has been said about the statutes of Lord Macauley on Indian education but nobody can deny that though the system was essentially to produce clerks, it gave a window to the West and it is for this reason that among the developing countries India ranks at the top in making science a part of its cultural system. One will, of course, have to make special mention of Prof. Mahendralal Sarcar and Father Lafont of St. Xavier College of Calcutta in starting the Indian Association for the Cultivation of Science in 1876. Their contributions made it possible for a large number of people to take part in the process of absorbing modern science as a part of our system.

Intensive growth

It should not be forgotten that in the 19th century modern science was itself developing in the West and was at a period of intensive growth. In the century earlier than this, mechanics and optics had been understood but nothing was known of thermodynamics and electromagnetic theory. It is astonishing to us that only 150 years ago thermodynamics as we know it today did not exist and the entire phenomenon of electromagnetic propagation was yet to be discovered and applied. This took place only towards the end of the last century. In this sense the coming of science to India synchronised with the great developments of classical physics in West. It is not therefore surprising that many great Indian scientists started to emerge on the scene from towards the end of the last century.

As is known to most people, towards the end of last century, J.C. Bose started work on electro-magnetic propagation at a time when electro-magnetic theory was new and it seems amazing that somebody should have been working on such problems at a time when the subject was only just emerging in Europe.

J.C. Bose must have been very much a product of his age. He was brought up in a Hindu atmosphere with all the enthusiasm of

a new renaissance. His subsequent work on the behaviour of plants which can be rightly termed as biophysics is an outcome of this atmosphere.

It is difficult to assess the work of J.C. Bose and perhaps what he will be mostly remembered by now is that he started work on electro-magnetic theory so early in its development and for his contributions to fine instrumentation in India. The sensitive Crescograph is a forerunner to the modern oscilloscope and is a delight to see in Calcutta. His own creation, the Bose Institute, has undergone many vicissitudes but I believe it is now setting down to emerge as a powerful institution and is in a process of rejuvenation.

Curious

The other scientist who paved the way to considerable scientific activity, but himself took no part in it in any organised way, is Srinivasa Ramanujan. His life is a curious one and reflects the social atmosphere of the time in the Madras Presidency. What has always surprised me about the Madras Presidency is that though the people there have lived under British influence for a long period of time, they have never lost their own basic traditions. It has always been a strange mixture of a Missionary education, conservatism and an intense love for discussing abstruse subjects. This is the atmosphere which produced Srinivasa Ramanujan.

The phenomenon of Ramanujan resulted in the development of a very active school of mathematics at the University of Madras. It attracted many young men and the School of Mathematics under Vidyanatha Swamy produced many excellent mathematicians. Unfortunately due to problems of caste and anti-Brahmin feelings, the school did not get sufficient encouragement and the Madras University can no longer be counted as a great centre of mathematics. In fact, a lot of these intellectuals migrated to the Tata Institute of Fundamental Research (founded in 1945) at Bombay which is now probably the most active centre of mathematics in India.

The Science Department of the Calcutta University was the first to make important contributions to science in all its aspects during the early part of the century. Much of the credit for the creation of this atmosphere goes to Asuthosh Mukherjee, perhaps the greatest Vice-Chancellor this country has produced. He went out of his way to get bright young people and encourage scientific research at its best. The great works of Saha, Bose and Raman were carried out in this atmosphere.

By the time I get to know M.N. Saha, he had already passed his prime and he has been inducted into the political scene. We must note that it was he who brought to the attention of Jawaharlal Nehru the need for national planning, particularly scientific planning.

Though a giant in physics, I could see that organisation was not his strong point. He had taken on specific physics projects which required much engineering and technological but he did not seem to have fully appreciated its role in scientific research and could therefore not quite succeed in establishing

a wide based programme of scientific development. He later became a severe critic of our Atomic Energy programmes though he was very much interested in its exploitation. His contributions to astrophysics are well known but he will be measured by his many good students and the Saha Institute of Nuclear Physics which he started in Calcutta in 1945.

Professor S.N. Bose was a person who could not be categorised in any way. He was a lone worker and there were very few people who can call themselves as a Satyen Bose student. He was an extremely lovable man, wanting to do a lot for science on an organisational basis. He, however, did not have the gifts for this kind of activity and took strong and ad hoc positions on issues just depending on how he felt at that moment.

In commenting on the history of science during the last 100 years there is no doubt that C.V. Raman stands out not only as an outstanding physicist but as a man who tried to build a strong independent Indian School of Physics. He was deeply subjective, had strong views and was impatient of all things. He probably believed that without an impatient urge to do something one can never succeed.

He was essentially an experimental physicist but of the highest order and had to face many problems of 'house keeping' which he seems to have done exceedingly well in his days at Calcutta. He had the gift of attracting the best students from all over the country and they were all highly devoted and loyal to him. His students were paid very small salaries, lived together in small rooms and had to work in very unfavourable conditions. Yet they gladly spent their early active life working with the great Professor.

Simple things

His spirit of research gradually spread from Calcutta to other parts of India. He had demonstrated that from simple things great achievements are possible and his early work on musical instruments is still a classic piece of work. After the Raman effect his work on diffraction of light by ultrasonics is considered his last important work. At Bangalore he had more facilities and people collected around him from all parts of India. The unbelievable self-confidence which he had in himself and which he was able to infect his students with, created a new approach to science in the country.

However, his methods had several drawbacks and were not suitable for the type of research required in the late 1930s and after the war. He believed too much in working with the simplest of things and did not appreciate the value of a collective approach to research.

But there is no doubt that his tenure in the Institute of Science at Bangalore was the golden age of its activities, but even here he felt he was hampered by an outmoded administrative system.

Of the many students that Raman produced, there is no doubt that the most outstanding was

(Continued on page 392)

Priorities in Educational Planning

Raghunath Safaya*

The dawn of independence ushered in a new era of national reconstruction. Reconstruction began in the fields of agriculture, industry, commerce, technology and education. It was firmly realised by our national leaders that education has a vital role to perform in bringing about prosperity of the country. Planning in the field of education was considered as the first step to national prosperity. In fact even before 1947, Sargent Commission, while planning for educational development, quoted the famous lines of Disraeli, viz 'upon the education of the people the fate of this country depends.' And it is true not only for U.K. but also for any country. Consequently planning for educational development began with the 1st Five Year Plan.

The educational field of the country is vast indeed. At the beginning of the 1st Plan, there were hundred and one problems needing solution. But on account of limited resources available the educational planners could not but devote their attention to the major and the pressing problems, and leaving solution of the remaining problems to future. Limitation of resources lead to one prerequisite of planning, i.e. fixing priorities. The Planning Commission fixed some priorities. It stressed the following aspects of education for implementation and development :

1. Inadequate educational facilities.
2. The top-heavy structure of education with only 32.2% of direct expenditure on primary schools.
3. Great disparity among the states in matters of educational opportunities.
4. Uneven distribution of educational facilities between urban and rural areas.
5. Lack of balance between provisions of facilities for different sections of the society.
6. Large scale wastage.
7. Absence of adequate facilities for technical and vocational education and scientific research.
8. A very large percentage of untrained teachers.
9. Unsatisfactory scales of pay and conditions of service of teachers, and
10. Economic handicaps to poor but able students at the University level.

It will not be out of place to make an appraisal of the priorities fixed by the Planning Commission. But before we actually make an appraisal, let us discuss how priorities should be fixed. There are various points of view regarding the mode of fixing priorities. I may mention three such modes.

The first mode is fixing priorities according to the *time periods*. There are certain tasks that need immediate action and some which can wait. In this way we can easily have three plan periods viz.

4th, 5th and the 6th Plan. The second mode is fixing priorities according to the *level*, national, State or local. Each of the three controlling authorities of education have their own functions and spheres, and prerogative will be limited to their own spheres. The third mode is according to the *task*, namely, scheming, financing and implementing or executing. We have to fix priorities for planning various tasks in education, which may or may not need financing. There are a number of tasks in education which need human resources rather than material resources. It is regrettable that the only planning that has been done with regard to education has been financing, i.e. allocation of funds for various sectors, irrespective of the fact that no preparation was made for the utilisation of the funds, with the results that funds were either wasted during the five plans, or were unutilized. Statistics reveal that roughly 10% of the funds were not utilized at all. The major task, therefore is implementation of the educational programme rather than spending funds.

Now a pertinent question arises here. Even if we take into consideration the above nine dimensional priority, design, what should be the actual basis of fixing priorities. I may mention the following five major criteria.

The first is the **FOUNDATIONAL** basis. Whatever sector of education is the very foundation the educational programme, that must be given the first priority. Which sector is foundational, that will be discussed a little later. But foundational basis is to be considered the first. Unless the foundation is strong no multistoreyed building can be built over it. The second is the *structural* basis. As a total structure of the building is to be planned soon after the foundation, so the present structure of education must be improved and priority must be given to this aspect. The third is the basis of *neglected sphere*. There might have remained certain important sectors totally neglected even after improving the total structure. The fourth is the *maintenance* basis. Whatever has been constructed has to be maintained properly and consolidated. The fifth is the *improvement and decorative* basis. Timely improvements in all the educational spheres need to be made, and deterioration checked. The last is the *expansional* basis. The existing construction, well-founded, well-designed, well-maintained and well-improved upon can be expanded.

Now let us study the five year plans from the point of view of the priorities fixed. We find that inspite of the rapid expansion of education and completion of a number of projects, a number of glaring defects are discernible now at the end of the five plans.

The first defect is the *absence of long term plan-*

*Principal, Govt. College of Education, Chandigarh.

ning. Each plan had its immediate targets. But the five plans together do not make one comprehensive whole. It would have been better if we had prepared 25 years plan, and subdivided the same in five parts. In this respect we realize the wisdom of Sargent Commission who tried and out-lined educational development over a period of 40 years.

The second defect is the *tempo of expansion*. We became too much enthusiastic in implementing the directive of Article 45 of the Constitution, and tried to hurry down compulsory education everywhere. We could not imagine the consequences of compulsory deduction drive. The unprecedented expansion at the elementary stage, created pressures from below mounting up in University sectors. First the elementary education was the minimum, but then the secondary education become the minimum and higher education the optimum. Still larger expansion took place in the sector of vocational, technical and professional education, and it became difficult for the State Governments to cope up with the same.

The third defect was *quantity at the expense of quality*. We paid our attention more to quantity than quality although much of the finances were not involved in some sectors promoting quality, e.g. preparation of text books, revision of syllabi, in service training and instructional improvement. We tried to convert each school into basic pattern by merely providing a non-recurring grant, and the system failed.

The fourth defect is wide and shallow planning. We have taken up almost every item of education and tried to do something of everything, with the result that the meagre resources available to us were diluted, being spread over a large area. This comprehensive Planning has caused shallowness in the educational achievement. Hence there is the need of selected sectors approach. There are some sectors where total achievement is needed immediately, e.g. improving pay-scales of teachers, teacher education, textbook production, etc.

We are now in a position to test our achievements at the end of the five plans, and see whether the priorities that were fixed by the Planning Commission have culminated into fruitful results. We can take up all the three points of view in fixing priorities, as mentioned above viz time periods, levels and tasks. From the point of view of time periods, we find that no comprehensive plan for 25 years was prepared by the Planning Commission. Each plan was detached from the others. There was no scheme of fixing priorities separately for each plan.

Taking the second point of view into consideration, viz the different levels, we find that no planning was made at the local programmes including

- (i) provision of seven years of effective primary education,
- (ii) adding one year to the school stage, and
- (iii) vocationalisation of secondary education,
- (iv) from 1985 onwards, emphasis should be laid upon the development of higher education and research.

Now let us make an appraisal of the priorities fixed by the commission and weigh their decisions on the criteria mentioned above. So we take the first basis namely the foundational basis of fixing the priorities. In this connection we shall have to ask the question, what is the foundation of any educational programme—the buildings, the equipment or the human material. Of these teacher/headmaster/lecturer/inspector/administrator is the very foundation and the nucleus. Education without teacher is impossible as hospital without doctor, court without judge, city without town planner, bridge without engineer a farm without a farmer and so on. The first priority in the entire educational planning should be providing suitable staff, training the staff, and giving them adequate salaries. It is known to all that till recently salary scales of teachers were shameful, and the service conditions are still bleak, discouraging any intellectual to join the profession. Teaching has become the last resort of the unemployed. The Education Commission has made a detailed survey of the emoluments in different professions, and finding the ridiculous position of the teaching profession in comparison with other professions, it made full recommendations for improvement of the teachers lot. But both the Central and the State Governments must pay first attention to this sphere of education. In the 9 dimensional chart of priorities teacher education occupies the first position. It must be given the first priority, in the 6th Plan. Once the grades become at par with the grades of other professions, slight improvements will be needed in the 7th and the 8th plan. Teacher education and pay scales of teachers should be the entire responsibility of the Union Govt. It is clearly known by now that majority of the States are not prepared to share financial responsibility of implementation of the scheme prepared by Indian education Commission. If postponed, it will be detrimental and suicidal for education. Once you decided the foundational basis as the first basis or determining priority you cannot shut your eyes to those aspect of educational planning. Majority of the privately managed institutions are not able to finance the schemes, without Government grant.

The second basis is *structural*. We must complete our entire structure of education from elementary education to university. Here we find that priority should be given to elementary education, then to secondary education and lastly to University education. I feel that during the past five plans we have had enough of expansion in the elementary fields. Now is the time for qualitative improvement and consolidation. During the next plan, the percentage of school-going children in the age group 6-11 would go up from 78.5 to 93.1 and in the age group 11-14 it would go up from 32.2 to 47.4. The goal of free and compulsory education for all children can be expected to be achieved by 1986. Our planners have been too much enthusiastic about reaching the goal earlier, with the result that elementary education has suffered qualitatively. Our second priority should therefore be improvement of elementary education. In

the qualitative improvement we shall have to exclude building and equipment from this expenditure, as the responsibility of providing buildings which cost for no less than 800 crores shall have to be shifted to the local sector. The local bodies must remain highly active during the 6th plan, and must provide funds for non-teacher items of primary education such as building, equipment, text books, uniform mid-day meals, conveyance to the pupils etc. Expenditure on teachers, inspection, supervision, preparation of textbooks and administration should be borne by the State. Centre should have the least responsibility in the sphere. Expansion should take place only through phased programme suggested by the Commission.

Our educational structure cannot be complete unless we improve secondary education which is even now the weakest link in the educational ladder. Here our attention should be drawn to vocationalisation so that 50% of the pupils at the end of the 8th class directly enter the technical and the vocational fields, as suggested by the Commission. Herein I do not agree with the Education Commission in spending money on the conversion of pre-university to higher secondary. That will tantamount to dismantling the one and constructing the other. The existing arrangements may continue till we can find funds for purposes other than improvement programme. Improvement in secondary education is needed in the sphere of guidance, textbook and evaluation. Other items can wait. Diversification of courses and multipurpose system has no meaning without the provision of guidance. There is immediate need for 2000 counsellors for 2000 higher secondary schools in the country, and the number will grow along with the number of schools. I do not agree with the Education Commission that one counsellor may be appointed for ten schools. I want priority to be given to the guidance programme so that during the next few years, 2000 counsellors are trained at the guidance centres in the states. Why not to depute one teacher from each secondary school and complete the task? This should be done at the State level in the 6th Plan, and implemented first of all. As for textbook production is concerned, it needs brains rather than finances and hence the scheme should be implemented forthwith at the central level. The same about training teachers in the methods of evaluation. At the college stage, no expansion scheme is needed to be given any priority. What is needed is the improvement of standards not through finances but by effective guidance, supervision and administration. Many of the problems like students unrest and indiscipline can be solved by effective administration. Increasing working hours, and working days in the year, strengthening tutorials and remedial classes and introducing many methods beside the lecture method do not need finances, and hence can be implemented at the State level forthwith. No new universities need to be opened. I feel an outlay of about 200 crores as provided for university education could be controlled and the saving utilised in vocational and technical education.

Our third basis of priority is equality and provision for the neglected spheres. Herein I feel, pre-primary education, girls education, education of the backward, education of the handicapped and health education are predominantly neglected spheres. These items have not been given the priority these deserve. The Commission has been vocal about advanced centres of research, increased emphasis on research in various sciences, cultural programmes and social education but I feel that the neglected sectors of education as mentioned above need to be given the first priority. Higher education and research should be given the last priority, though not neglected as these are not of foundational value.

I may thus summarise the schedule of priorities.

1. Improvement in salary scale of teachers and in teacher education.
2. Qualitative improvement in elementary education.
3. Vocational education, guidance, textbook improvement and evaluation at the secondary stage.
4. The neglected sectors of girls education, training of women teachers, education of the handicapped and the backward.

Before I conclude, I would like to mention the greatest of the great priorities not only for education but also for national reconstruction, and that is family planning. Our population has been increasing at the rate of 3% per annum, with the result that the student population also has been rising almost at the same rate, effecting the rise in enrolment increasingly educational expenditure. With the present rate of growth of population, enrolment drive shall have to be made stronger, so as to keep pace with the rise on population. It will obviously mean exhausting our financial resources for the sake of better enrolment at a better speed, which we may not be able to bear. The only remedy is to check the birth rate through family planning. The Indian Education Commission has made a comparative study of the educational implications of these assumptions of population growth and birth rate. The assumptions are—(i) high assumption i.e. more than 50% (ii) medium assumption i.e. 50%, and (iii) low assumption i.e. very low birth rate. In accordance with the three assumptions, the Commission calculates the variation in the per capita income. In high assumption, it will be Rs. 781.4 under medium assumption it will be Rs. 931.6 and under low assumption Rs. 1010. The Commission assumed that the total national income is 1,80,000 million in 1966, and it may increase at the rate of 7% per annum over the next 20 years. Our enrolment drive shall have to be geared to the national income and rise in population. It is only with the low rate of population growth that we can raise the national income and spend properly on education. □

University Education in India : Past and Present

P. N. Laha*

Education has been one of the pathways towards man's ascent from the simians to Homo sapiens, involving a very long past. While unfolding the past, I have kept in view the remark of Radhakrishnan that "History records the stages of man's education" and Robert E. Lee's conclusion: "It is history that teaches us to hope".

University education is a component of the total system of education. Hence, for a comprehensive approach, I have considered it appropriate to include some facets of education in general as well.

"Etymologically, the word education means just a process of leading or bringing up." Sociologically, "it implies attention to the conditions of growth", which connotes that education is a necessity of social life. As social life is a continuous process, so, therefore, is education. Stemming from these would be the fact that education is one word, but many things.

The philosophy of education of a country is determined by the ambit and content of contemporary knowledge in its various spheres and facets and the prevailing social milieu, and is influenced by the country's traditions. "A chain is only as strong as one of its links, and tradition may be likened to a chain in which every generation is a link." So should be the educational tradition of a country—a link between every generation, though the system of education of an age will exemplify the general ethos of that age.

As Dewey remarks: "Various epochs of the past have had their own characteristic struggles and interests. Each of these great epochs has left behind itself a kind of cultural deposit, like a geologic stratum. These deposits have found their way into educational institutions in the form of studies, distinct courses of study, distinct types of schools." Our cultural deposits—as enshrined in our traditions—must be utilized as a resource for the present—reasserted in terms consonant to our present needs and in the light of new discoveries. Simultaneously, it needs to be highlighted that university education is undergoing a development which is quite extraordinary in terms of both the extent and the nature of the change.

Our traditions of university education from ancient India

"Education is no exotic in India. There is no country where the love of learning had so early an origin or has exercised so lasting and powerful and

influence." Ancient India encompasses a very long period of nearly twentyfive centuries, roughly divided into three periods, broadly termed as the Vedic period, the Buddhist period, and the post-Gupta period. Universities in ancient India can be traced back to the 7th century B.C. Takshasila, Nalanda, Vikramsila, Valabhi, Banares and Kanchi—to mention only a few of them—were great universities. Some of them had attained international reputation.

University education in ancient India used to be a joint venture between the teacher, the taught and the society. It is well documented in the following Upanishadic invocation :

सहनावतु
सहनी भुनक्तु
सह वीर्यं करवावहे
तेजस्विनावधीतमस्तु
मा विद्विषावहे ।

(Let us—preceptor and pupil—be protected together, let us be able to maintain ourselves, may our studies be radiantly effective, and let us be free from mutual jealousy).

Universities in ancient India were not universities as a university is defined today. They were residential centres of learning, where preceptors and pupils lived together under the common disciplines of the body and the mind, as well as in harmony with Nature. They possessed a deep awareness of our oneness with Nature. Their joint pursuit was directed towards the acquisition of knowledge in its various facets and the sedulous realisation of two maxims: "know thyself" and "Be thyself". The preceptor's role was more in what he shared with his pupils than in what he gave to them. "Permeating all physical, emotional and intellectual activities, there was an atmosphere of spiritual search in which pupils imbibed spiritual education without conscious effort..

Universities in ancient India had no fixed curricula, nor degrees were conferred by them. The student and the teacher—not the curricula for learning—were the principal elements in the educational programme. The purpose of a university was to study and teach all the more important branches of advanced learning. The teachers adverted to the supreme value of personal instruction. It was in the pattern of a traditional sequence, which was described in metaphysical language as "Guru Sishya Parampara". It involved what in the words of a philosopher could be described as "the invisible molecular forces that work from individual to individual". This was perhaps the reason for our

*Emeritus Professor of Medicine, G. R. Medical College, Gwalior.

lawgiver in the Mitakshara including in the list of heirs the disciple and the Guru.

The great teachers of that age enunciated the ideals of education thus:

युवा स्यात् साधुयुवाध्यायकः

आशिष्ठौ द्रिष्टौ बलिष्ठः ।

(Let the young man emerging from his pupillary condition be an Adhyayaka—a diligent student, as Asishtah—a well-disciplined being, Dridishtah—firm of will, and Balishtah—physically strong). What better ideals of education can we enunciate today?

Convocations used to be held at the end of the university education. Convocation addresses have been delivered from the days of Taittiriya Upanishad onwards—the ninth Anuvaka of which reads as follows :

सत्यं वद । धर्मं चर ।

स्वाध्यायमिमा प्रमदः ।

कुशलान्न प्रमदितव्यम् ।

भृत्यै न प्रभादितव्यम् ।

स्वाध्यायवचनाभ्यां न प्रमादितव्यम् ।

("Speak the truth, follow the path of righteousness, do not abandon your studies, adhere to the path of prudence and prosperity and always continue to learn and to teach.") What more wise counsel can be enjoined on the students while they are emerging into the world of life and activities on the convocation day of any university of today?

During the Buddhist and the post-Gupta periods, the concept of higher education had only a shift of emphasis. So there was little change in the philosophy of education during these two periods, but the demand for higher education had increased, which necessitated organizational change, resulting in its institutionalization.

The values contained in our ancient traditions of education are basic and fundamental. They are for all ages and for all times, because they are basic and fundamental and have very deep and strong roots, having had been nurtured through the weathers of many centuries.

The foregoing review of our ancient traditions of education reminds one of the following words of Tenanyson: "Knowledge comes, but wisdom lingers..." Our universities of the present must utilize the wisdom bequeathed to us by our ancient traditions of education. The aims of education must be not only to impart knowledge but to develop wisdom as well.

During the medieval period

During the medieval period, consequent to the transference of Islamic cultures, great changes occurred in India. Education then was not a social duty; it was mostly a personal or family affair. Arabic was the medium of Islamic education. And Persian was studied as an accomplishment of culture. Madrasas, which were primarily theological institutions, imparted higher education. Several of

them taught specialized branches of learning. Some of them had university status. Great fame had been attained by some of the Islamic centres of learning. Aside from them, there existed the University of Navadvipa in Bengal and the celebrated schools of Madura, Banaras, Ujjain and Kanchipuram.

During this period, the demand for the ancient system of education had decreased considerably, consequent to the time and due to the paucity of financial support. Nevertheless, a remarkable advancement of that period was the production of works in Sanskrit and the development of Hindi and many regional languages. *Pari passu* with them, "the teachings of Ramanand and Kabir were manifestations of a philosophy and a language, which combined Hindi, Arabic and Persian elements". As Kabir remarks, "the two systems of education flowed in parallel streams and did not interpenetrate except in the case of a few rare individuals". High esteem and veneration were accorded to learning and erudition. The "Emperor's taste was", however, "the barometer of the then literary atmosphere."

Islamic higher education was mostly intellectual. It inculcated the habit of right thinking and the right use of words. It also stressed that intellectual eminence must not make one arrogant and that one must develop humility. During that period, "The ideal was a man who was master of all subjects and so able to appreciate the opinions of specialists in any branch; not so one-sided in his development, through having spent so much time on one subject, that he is ignorant of all others." This ideal carries great wisdom, and particularly so, in the present era of the growth and proliferation of specialization.

Western education

The western or modern system of education was introduced in India by Christian missionaries. Education received scant attention till the introduction of the "educational clause" in the Charter Act of 1813, whereby the East India Company agreed to provide a sum of not less than a lakh of rupees in each year, to be applied, *inter alia*, for "the revival and improvement of literature and the encouragement of the learned natives of India, and for the introduction and promotion of the knowledge of the sciences among the inhabitants of the British territories of India."

Macaulay's Minute of 1835 was the most important milestone toward the establishment of western education in India. As Ronaldshay says in his book entitled "The Life of Lord Curzon", Vol. II: "The revolutionary change of policy, under which a system of Western education had been set up under the auspices of the Government, dates from the year 1835, when Lord Macaulay's famous Minute decided once and for all the controversy decided once and for all the controversy which had been gathering force between the Orientalists, who stood for the existing order, and the Anglicists, who urged the introduction of a Western System." He further says that "while it had to be admitted that

the system had been responsible for some remarkable results during the seventy years of its operation it was clear that it had developed some serious defects." In the same context, Kabir remarks: "Instead of building up a system from the bottom by introducing widespread mass education, an attempt was made to build education from the top. These universities themselves touched only a microscopic minority of the people, but since a university degree was a sure passport to profitable employment in those early days, the influence of the universities was for more widespread than their numbers would warrant." But, as he further remarks: "One must not overstate the case—One must admit, however, that the western education has had a remarkable effect in loosening social prejudices and creating resilience and flexibility in the Indian mind."

Since independence

"The achievement of India's independence hastened the need for a "complete and comprehensive enquiry into all aspects of university education and advanced research in India," as it was imperative for the country to lose no time in remoulding her educational policy as one of the first essential steps in her national progress."

There are many landmarks towards the restructuring of university education in India. A few of the recent ones are the University Education Commission (1948-49), headed by Dr. S. Radhakrishnan, establishment of the University Grants Commission in 1953 and the Education Commission (1964-66), under the chairmanship of Professor D.S. Kothari. As the Report of the Education Commission states: "In broad terms, the functions of the universities in the modern world may be said to be : to seek and cultivate new knowledge, to engage vigorously and fearlessly in the pursuit of truth, and to interpret old knowledge and beliefs in the light of new needs and discoveries." Considerable thoughts are being given and multidimensional endeavours made towards the reform of our university education.

Reform of our university education

History teaches us that human institutions require periodic reform for redesign and readjustment. Education is one such institution. Reform of university education is being necessitated by determinants stemming from advances in the knowledge of science and technology, changes in social philosophies, and new economic forces. University education cannot be out of touch with the life around it. As Chakravarti has said, "No university has ever remained for long out of touch with the life around it and stayed great." In the same context, the following words of Sir Eric Ashby are an important pointer: "If the University repudiates the call to train technologists, it will not survive; if it repudiates the cultivation of non-practical value, it will cease to merit the title of University."

The present era is an era of explosion of know-

ledge, which involves learning and relearning. It cannot be met too successfully by increasing the quantum of time allotted to formal education. Neither so, by converting the system of university education into what can be described as "the beehive model,"--in which "the total system perfects itself as the individual is steadily dwarfed." It could be met with, at least partly, by introducing what may be called "Educational weaning"—a process which places increasing emphasis on independent learning by the student rather than on instruction imparted by the teacher. The system must also provide ample scope for individual fulfilment, which is central to all education.

Vis-a-vis the foregoing, it would be relevant to highlight that "Education and instruction refer to complementary aspects of bringing human beings to maturity and adulthood. The first is the process of developing the person, of bringing out its intellectual and emotive qualities, its powers of self-expression, its capacity for service to itself and to others; while the second must be considered primarily as the process of imparting the information required for understanding the world and keeping alive therein." There is, however, no dichotomy between education and instruction. Instruction imparts knowledge. And knowledge can be gained only through knowledge. But "Depth of understanding must not yield place to breadth of knowledge."

University education is higher education. It has to be horizontal, as well as vertical. That would give it a wider dimension, and indeed, a deeper one. As Schumacher remarks, "Education can help us only if it produces 'whole men'. The truly educated man is not a man who knows a bit of everything, not even the man who knows all the details of all subjects (if such a thing were possible): ... He will not be in doubt about his basic convictions, about his view on the meaning and purpose of his life." In essence, a truly educated man is one who is adequately instructed, who has developed into an integrated personality, realises his intellectual responsibility and who possesses the notion of human dignity.

There is a great increase in the number of students seeking university education. It is a global phenomenon. "The root causes of this increase", as Perkins states, "are to be found in the requirements of modern technological society. The need for trained or even semi-trained manpower is unending" Notwithstanding the incalculable value of university education, as Ramaswami Aiyar has said, "greater concentration is undoubtedly necessary on the positive and practical sides of education." And "Since education is a social process", there have to be bilateral feedbacks and a state of symbiosis between education and society.

We have now a number of universities, "but" Ramaswami Aiyar has suggested, "one would prefer that each of these Universities were individual not only in tradition and background but individual in its studies and research. If each University

devoted itself to some special subject or group of subjects suited to its locality, or the history, circumstances and aptitudes of the people whose interests it serves, we shall be able to do more in the aggregate than is possible at present, with much less expenditure of money and energy." But our universities should be not only all-India in character, they should be international in scope as well—through "what is styled academic mobility" so that teachers and students of one university can visit and take part in the activities of other universities—with mutual gains, and developing broader horizons for acquiring knowledge.

The universities of the world, despite their differences, share some common problems, Perkins, in his paper entitled "Five Crises of the World's Universities", discusses them under the following heads: 1. that of numbers (of students entering higher education), 2. that of finance, which stems directly but not necessarily from the crisis of numbers, 3. the relevance of the university curriculum, 4. the crisis of the new priorities, and the fifth is the new scepticism that denies the possibility of objective, rational thought. While Schumacher adds another dimension, as he says that "Education cannot help us as long as it accords no place to metaphysics. Whether the subjects taught are subjects of science or of the humanities, if the teaching does not lead to a clarification of metaphysics, that to say, of our fundamental convictions, it cannot educate a man and, consequently, cannot be of real value to society."

The very substance of university education should be a powerful creative and transforming principle. The social product of university education will be the measure of its utility, while the cultural product will be the measure of its creativity. The quantity, quality and vitality of university education will be determined by the yields of these two products. And to gain these objectives, there has to be a proportionate balance of the humanities, social sciences, sciences, and technology in the university curricula. "The time is ripe", as Ghali remarks, "for bringing the scientist and the humanist together again... They must form their students to this unified outlook, where in the human values are the foundation of society, and whereby the social purpose derived from these values becomes the responsibility of science and technology as much as of the social sciences and the liberal arts".

Our values of university education need to be renewed. And "they are to be sought in a considerable change in which we are all involved—and most of us actively—in the way we live and the demands we make on our existence, and in our values, i.e. what we consider to be of value and, indeed, our notion of what value is itself." We must find new solutions that will preserve our old values. And we must remember with reverence all men and women down the centuries who have thought and sought to create a comprehensive system of university education, which would be productive, creative and having a moral order. In the words of Gardner, "...The honour due them is not

diminished by the fact that what they tried to build was... falsified by others, nor by the fact that what they built was right for their time but not for ours, the structure of values we build today will also outlast its usefulness. But the impulse to build it is sacred."

Epilogue

Reform of our university education is not simply an academic matter. Everyone of us shares a responsibility toward it, as university education has its influence, at first, on individuals, but in the end on whole societies.

We must define our university education and plan accordingly. "The problem of planning for the future", as Moore remarks, "it probably more pertinent in the field of education than in other areas of human endeavour. Fundamentally, education is designed to prepare young men and women to become worthy members of the society of the future. Hence, we must plan carefully so that we may not be charged with educating people for a world that does not or will not exist."

Stemming from all of these "is the broader question: What is the purpose of a university education? Is it occupational, intellectual, moral or social—or some subtle combination of these?" The answer is to be found in the vision of Tagore—which is documented in the following words of his... our education should be in full touch with our complete life, economical, intellectual, aesthetic, social and spiritual; and our educational institutions should be in the very heart of our society connected with it by the living bonds of varied co-operations. For true education is to realize at every step how our training and knowledge have organic connections with our surroundings." □

Subscription Rates

Period	Inland (Rs.)	Abroad	
		Surface (Rs.)	Air (Rs.)
1 year	16.00	80.00	140.00
2 years	30.00	150.00	260.00
3 years	44.00	220.00	360.00
5 years	72.00	350.00	550.00
Single copy	00.80 ps.	4.00	8.00

The Journal is mailed on 1st & 15th of every month.

Problems of Undergraduate Courses

S. Abdul Kareem*

It is unfortunate that collegiate education has suffered enough neglect so far as the restructuring of the syllabus is concerned. There is hardly any innovation, much less diversification in the course as well as the curriculum. Even in some established institutions the students but have limited options to choose from. The restrictions are sought to be imposed on grounds mainly financial and not academic. The recent directives from the Collegiate Directorates and Education Boards 'freezing' the subject combinations do not permit much looking over the academic barricades. With information doled out in water-tight compartments, the interdisciplinary approach so thoughtfully mooted gets scuttled at the undergraduate level.

Student counselling has degenerated to mere form-filling and we have no one who can present an interconnected approach, if not an integrated one at this level. For instance, the students offering Economics as a Core Subject are not told about the importance and relevance of Mathematics at the undergraduate level with the result that the students are handicapped at the higher level when they are called upon to study 'Econometrics'. The divorce between Sociology and Psychology is almost complete and its potential is realised when the students go to reputed institutes of social work.

It is needless to suggest that college teachers should have adequate scope to update their knowledge before it gets outdated by attending Summer Workshops and Courses. In service facilities are lamentably lacking for college teachers so much so their teaching is more often repetitive and not innovative. Of late, open book system of examinations is thought of without taking into account the analytical approach required of examiners or papersetters. With such systems, a resourceful examiner should pose questions involving analytical thinking, which otherwise would lead to lifting of passages from permitted books. Even this would prove a great handicap to the examinees as the management of time is of prime importance.

Education has had its full swing from job-orientation to job-alienation—the former is forced as a sure remedy to our present ills and the latter as directly contributing to the forgotten ideals of liberal education. The college stage as the 'preparatory pause' is surprisingly more relevant in a

different way from that of H.G. Wells as the alumni are more often found simultaneously knocking either at the doors of employment exchanges or those of the matrimonial bureaus !

The concept of 'quality institutions' as suggested by prof. K. R. Srinivasa Iyengar appears to be a variant of the much-discussed 'autonomous' institutions and this in its wake, may create a two-tier system of quality and non-quality institutions, which may inadvertently result in a kind of 'caste' system in education. On the contrary, educational experimentation and not educational adventurism, should be given a fair trial in a few select institutions attached to the NCERT or SCERTs. 'The Experimental College' by Alexander Meiklejohn published in 1932 records an experiment in liberal education made at and authorised by the University of Wisconsin at Madison. With the approval of the Advisers of the University and with a body of students this experiment was tried with a view to examining 'the content of study', the 'methods of teaching' and the 'determining conditions of Undergraduate liberal instructions'. The following findings of Dr. Meiklejohn from this experiment are electrifying:

"This closeness of connection between the character of a society and the character of its education cannot be too strongly stressed. Schools and colleges are not something apart from the social order to which they belong. They are that order trying to prepare its youth for participation in its own activities. And a society can only teach the hopes, the knowledge, the values, the 'beliefs which it has'.

The drift of our modern life is but a reflection of the absence of a positive drive in our educational system with the result that society has incurred a progressive debility, if not a disease, of consciousness and of powers of coordination and control. Modern conditions make it inevitable for specialisation and sophistication to co-exist with education. In the words of Dr. F.R. Leavis, our urgent task is "to explore the means of bringing the various essential kinds of specialist knowledge and training into effective relation with informed general intelligence, humane culture, social conscience and political will". This task of synthesizing specialist knowledge may be too high a goal for the colleges. But a knowledge of this goal is highly imperative to the college teachers.

*Deptt. of English, S. K. Art College & H.S.K. Sc. Instt., Hubli.

(Courtesy : The Hindu)

Kidwai's advice to Bihar VCs

Dr. A.R. Kidwai, Chancellor of Bihar Universities, while addressing the meeting of the Vice-Chancellors held in Patna under the auspices of the Inter-University Board said that the universities should make all efforts for proper utilisation of the Government grants and to streamline the working of the accounts sections of the universities. He urged the Vice-Chancellors to get the up-to-date audit of the accounts done immediately. In future utilisation certificate should also be submitted to the Government regularly. Dr. Kidwai emphasised the need of training of staff of accounts section in different universities which would be of great help in reconstruction of previous accounts and proper maintenance of current account. With regard to the teachers and other staff working against unsanctioned posts in different uni-

cellor expressed the view that there could be two or three examinations for the students of previous sessions and the students may be given the option to appear at any of these examinations. On the question of problems created due to increasing number of private students he suggested for holding separate examinations for them. He felt that in the present situation it would be better to award Bachelor pass degree to all the students completing their prescribed courses and the universities should be concerned with the conducting Bachelor Honours course and Master examinations. He wanted that all these matters may be considered by the Academic Council of different universities. He disapproved the idea of giving average marks in those papers in which students walk-out from the examinations as the universities have

improve by admitting right type of students.

After the Chancellor's address, the meeting of the Inter-University Board was held under the chairmanship of Dr. S.P. Sinha. The meeting was attended by the Education Commissioner, the Vice-Chancellor of Magadh University, the Vice-Chancellor of K.S. Darbhanga Sanskrit University, the acting Vice-Chancellor of L.N. Mithila University, the Financial Adviser of Bihar University, Dr. D.N. Sharma, Chairman Hindi Granth Academy and Dr. G. P. Sinha of Patna University. The Joint Secretary in the Education Department and the Financial Adviser to the State Government were also present in the meeting.

It was decided that in order to clear the pending certificates and degrees which have accumulated in the universities for the last several years, the Inter-University Board should frame draft statutes enabling the universities to issue degrees within six months from the date of declaration of results. If the degree of any student of previous year when there was another Vice-Chancellor, is to be issued, it will be signed by the Vice-Chancellor who is in office when the degree is being issued. The Board also decided that no private permission should be given for any examination or for any subject in which there is no teaching in the university. For the Master's examination a private candidate shall be required to attend regular classes for three months. The jurisdiction of the universities for granting private permission should be limited to the jurisdiction of university concerned and not to the whole State of Bihar. No private candidate should be admitted to the university examination unless there has been some screening by way of their passing at the test examinations. On the question of introduction of three-year degree course under 10+2+3 pattern of education the matter has been left to the Academic Council of universities to discuss the matter and send its opinion to the Board for further consideration.

CAMPUS NEWS

versities, the Chancellor asked the universities to examine how far these appointments could be regularised. He appealed to the teachers for their cooperation in creating proper academic atmosphere in the university campus.

Dr. Kidwai said that many of the academic problems concerning the universities were not being properly attended to for want of academician Registrars. He expressed the view that it would be better to have Registrars from the academic side so that they have adequate orientation. He wanted the universities to take special care of maintenance of existing buildings. He expressed the hope that with the commencement of the next session, hostels, common rooms and other buildings would be renovated. In order to clear the backlog of university examination the Chan-

no authority to award marks in any paper in which there has been no examination.

The Chancellor also mentioned that there had been allegations that undesirable elements take shelter by virtue of their being students in the university or colleges. He wanted that the present system of admission on the basis of merely the marks and not the antecedents should be replaced and to start with admissions in postgraduate classes should be on the basis of competitive test and interview. He hoped that this system would help in eliminating admissions to academically poor and undesirable elements in the university since the attitude of the students can be known from interview. The Chancellor felt that there was no dearth of talents in Bihar and teaching in the university would

PAU's new building for soils department

The Department of Soil Sciences of the Punjab Agricultural University moved into its massive new building built at a cost of Rs 60 lakhs and over a time span of five years.

When Hissar Campus was a part of the PAU, the Soils Department was mainly developed there. The small section at Ludhiana was meant only to teach undergraduates. When Hissar became a separate University in 1970 the Soils Department at Ludhiana also began to grow. Soon the staff increased and several fellowships came from ICAR, UGC and Atomic Energy Commission but there was not sufficient room to work in either for the staff or for the fellows. A study team of ICAR recommended the construction of a new building for Soil Sciences, which has now been completed. The national level work on micronutrients in soils and plants is also housed here since the all-India co-ordinated project on this subject is located in this University. There are 123 teachers in the Department in the rank of Assistant Professor, Associate Professor and Professor. It is imparting instructions to 750 undergraduates, 40 M.Sc. and 30 Ph.D. students. Many of the students are from other universities and from foreign countries.

Contrary to popular belief, Punjab agriculture is based on poor soils. These have developed on alluvium brought by fast rivers Ravi, Beas, Sutlej and Ghaggar. These are predominantly coarse in texture with sandy loam as the dominant textural class and poor in fertility. There are substantial areas affected by salinity, alkalinity, drought and water erosion. The necessary technology to make these soils perform better than the best in the country is the work before the department of soil sciences.

It is the opinion of the experts that with the application of optimum amounts of manures and

fertilizers, crop yields can be doubled in the not too distant future. For this they want a large number of soil testing laboratories to be set up. Of the 16 nutrient elements that are considered essential for plant growth, only 5 are presently considered deficient in the Punjab soils. These are nitrogen, phosphorus, potassium, zinc and sulphur. But blanket recommendations of fixed quantity of a certain fertilizer over large areas of land is not proper particularly in view of the recently increased costs of fertilizers.

It is for this reason that the Vice Chancellor, Dr Amrik Singh Cheema, recently issued an appeal to farmers through the University's widely circulated Punjab magazine *Changi Khedi* that they should go in soil tests more vigorously. Information on fertility status of soils is essential for this purpose. Variations in fertility occur even in adjoining fields. These are caused by differences in soil texture, cropping, history, management, etc. Punjab has 10 million acres of land under cultivation. If each acre is to be soil-tested every five years, two million samples have to be tested every year. The present capacity is only to test 1.7 lakhs i.e. less than one-tenth.

Microcomputers : A technology forecast and assessment

Since the advent of the first stored-program electronic computer in the 1940s, computer technology has undergone rapid and continuous change. During the 1950s transistors replaced earlier vacuum tubes as the basic logic elements in such machines, and in the 1960s transistors were replaced by integrated circuits, in which many transistors, resistors, and capacitors are formed on a single crystal of silicon. With each technological development, computers have become smaller, faster and less expensive. Im-

provements have been measured in orders of magnitude and have been rapid, and the combination of increased functional capability and decreased functional cost has led to an increasing proliferation of computers in a variety of applications. During the 1950s and 1960s, most designs were oriented toward the development of large, high-speed, highly centralized computers in applications ranging from general computation to telephone switching. The impact on society in general was significant but subtle.

By the early 1970s, integrated electronics had developed to the point where the number of electronic components that could be integrated on a single chip of silicon was several thousand. This level of integration was sufficient to allow complete processors for calculators and small computers to be integrated on a single silicon chip measuring typically 3 to 5 mm, on a side. The term *microprocessor* was quickly applied to these new devices, and as technology evolved still further, permitting significant amounts of memory to be included on the processor chip, the term *microcomputer* was applied to these still more densely integrated systems.

The introduction of microprocessors and microcomputers represents an important turning point in the development of digital computers. The availability of extremely small, inexpensive, computers having significant processing power and versatility has allowed stored-program control and data processing to be extended into even the smallest electronic instruments. Solid-state integrated electronics, led by microcomputers, is now having a substantial impact on many diverse fields, ranging from industrial process control to health care and transportation. Computers are now becoming decentralized, with many dedicated microcomputers replacing larger centralized and time shared machines. Portable calculators are perhaps the most visible example of this computing revolution, but in spite of their anticipated effects on education and computation, they are relatively unsophisticated

examples of the present technology.

The development of technology for large-scale system integration continues at a rapid pace, with the number of components that can be integrated on a single chip doubling nearly every year. If these developments continue very far into the future, few fields of human endeavour will remain untouched by the micro-computer. The pace of past developments makes it essential that future progress be anticipated so that informed policy decisions can be made and to ensure that the maximum benefits from the technology can be realized.

Madras orientation course in English language

The present standard of English has gone down mainly due to the fact that teaching of English is imparted only in higher classes. The ideals of liberal education are on the way out and not enough emphasis is given to Humanities. An orientation course in English was conducted by the Madras University at the World University Centre at Madras. The aim of the course was to introduce the participants to the new techniques of Teaching and Testing. Emphasis was laid on the development of language skills. The ability of the participants to understand, speak, read and write the language was enhanced.

The old method of teaching and testing depended heavily on lectures, dictation of notes and testing the memory power of students rather than their language skills or creative talents. It was a passive affair in which the teacher was all important and the student was treated as a lifeless receptacle to receive whatever the teacher chose to pour in. This method had been adopted for all these years in educational institutions. The conditions have still changed with the passage of time and there is an urgent need to meet the needs of new society and to revise the aims and methods radically. The aim today is to cultivate basic skills. Towards this end the individual needs of students should be examined. Not all students are of the same level

and their requirements are different. Hence the need for teaching which recognises the difference in the abilities of students. There should be room for remedial work. Teaching has to be student-oriented. It should ensure maximum student participation in the process of learning. Textbooks should be treated in such a way as to develop in students abilities of independent reading and writing rather than conveying the content. All this implies a great deal of planning and guided composition work. Examinations should be directly related to these aims and there should be questions testing every one of the skills distinctly. No student should be allowed to pass merely because of memorisation or his familiarity with texts or guides. The new scheme is the fruit of deliberations by the Board of studies over a period of one and a half years. Draft proposals were sent to all colleges in the university area. The Board considered the various suggestions and finalised the proposals. But the success of the scheme depends on the teachers.

The participants were advised to keep their eyes and ears open, see the soundness of the scheme for themselves and do their best to make the scheme a success. Group discussions, demonstrations and a workshop on designing question papers were also conducted for the participants who came from the colleges scattered all over the State of Tamil Nadu.

World Bank doubles lending for education

The World Bank has almost doubled the lending for education to developing countries from 6.4 billion dollars during 1975-78 to 11.58 billion dollars for 1979-83. Announcing its new policy for educational lending, the Bank said while it would provide assistance to countries in project preparation and sector analysis, the form will gradually change from direct responsibility to guidance.

According to the sectoral policy paper of the World Bank, its lending objectives would be phy-

sical expansion of schools, curriculum development, production of learning materials and improvement of internal efficiency. The Bank's emphasis will vary from country to country. In lending to low income countries, the emphasis will be on the development of low cost basic education programmes to meet the minimum needs of school age children and uneducated adults.

The Bank's priority in middle income countries will be the development of skills to meet the needs of increasingly sophisticated economies. Measures to improve the internal efficiency will be stressed in all countries. The Bank will support studies and plans of countries that seek to develop, balanced systems of education and will extend its assistance to different forms of higher levels of education. Most of the assistance of the Bank in providing opportunities in basic education for school age children will be concentrated on increasing or upgrading institutions and physical resources.

To improve the efficiency in learning the Bank will support all projects involving curriculum development, preparation and production of instructional materials. It would support the general pre-employment training for labour market and continue project-related training. The Bank will review mechanisms for providing general secondary education at reduced costs and consider funding exploratory projects to assess their feasibility. It will continue to support higher level education and training and provide assistance to technological infrastructure such as laboratories for applied research and consulting engineering organisations. It will increase its support for software components that complement building and equipment and pay more attention to teacher training when new curricula are developed.

Training course for rural development officers of State Bank of India

A Training Course in Modern Agricultural Technology and Effective Communication for

Rural Development Officers of State Bank of India was held at the Communication Centre of the Bidhan Chandra Krishi Viswa Vidyalaya.

The Officers were trained in recent advances on production of field crops, fruits and vegetables, management of soils, water management and dryland farming, plant protection, animal production and animal health, inland fish production, processing and curing of fish, sericulture, agricultural economics and farm management, modern trends in agricultural extension, communication of farm information and strategy on repayment of agricultural loans. Study tour, field visits and film shows were also held.

Twenty eight Officers from eleven districts of West Bengal and Calcutta attended the course. This was the first of a series of four such courses to be held in 1980-81. It was organised by the Field Extension Wing, Bidhan Chandra Krishi Viswa Vidyalaya in collaboration with the State Bank of India. The training course shall be useful to meet the challenging professional needs of the Rural Development Officers.

UPSC personality tests to continue

The Union Minister of State for Home Affairs, Mr P. Venkatasubbiah, assured the Lok Sabha that the Government would make every effort to see that the backward and neglected sections of the society got facilities to compete for higher posts in Central Services. The Government was in complete agreement with the members who complained that the prized posts in the hureaucratic set up had been the monopoly of a small section of the population. The imbalance would be corrected. The weaker section of society which by force of circumstances did not have the best education particularly those in the rural areas and the scheduled castes and scheduled tribes would be brought up to the level of those better placed.

The minister referred to the

nine training centres set up for the scheduled caste and scheduled tribe candidates appearing for engineering and non-engineering Central Services examinations besides coaching centres in the States, and said that the government was constantly reviewing their adequacy. He ruled out the complete elimination of personality tests for the various examinations conducted by the Union Public Service Commission.

PM wishes all success to Indian contingent

Prime Minister, Mrs. Indira Gandhi, expressed the confidence that India will return with laurels from the Moscow Olympic Games. Addressing the members of the contingent at her residence Mrs Gandhi said India still have a long way to go in world standards in physical fitness. As an example, she said, in tennis Indians manage to reach the semi-final stage in tournament only to lose there.

In the present world in which fitness standards are going higher and higher, one way to start was to impart training from the childhood itself. My "very best wishes for your success", she added.

Earlier, the President of the Indian Olympic Association, Mr Bhalindra Singh, introduced the contingent members to the Prime Minister and assured her that they would do their best to keep up India's prestige.

Patna to revive moderation system

Patna University is considering a proposal to revive moderation system of question papers which was abandoned after 1975. Previously there used to be four members on the moderation board, two external and two internal. But the practice was stopped as a result of alleged

leakage of question papers by some of the members. Attempts had been made to revive the system for quite some time but it could not be implemented so far. The Vice-Chancellor of the University, Dr Ramavtar Shukla said that the matter would be discussed in the Academic Council and he would try to ensure a fool-proof guarantee so that the system could work properly.

Examination innovations at Bhavnagar

With a view to streamlining the examination system, the Bhavnagar University has decided to allow the 'failed' students to keep terms in the next higher class with the help of remedial programme arranged by the university. It has further decided that no punitive measures would be taken against student caught using unfair means in the examination. He would however be given an opportunity to reappear in the supplementary examination to be held after six months to improve upon his previous performance. The university feels that the students need proper counselling, guidance and proper feedback in order to give them confidence and security.

The university also proposes to start a Learning Resource Centre. The main objective of the Centre would be to prepare learning material and remedial programmes for undergraduate students. The Centre will also work as Counselling Centre for the university students. It is felt that the innovative steps taken by the university in guarding the developmental process of students will ultimately create confidence in higher education. The university will carefully watch this new experiment so that new technology of teaching-learning structures could be evolved.

Shillong centre of CIEFL conducts refresher course

The Central Institute of English and Foreign Languages regional centre located at Shillong conducted an Intensive Refresher Course for high school teachers

of English from Assam and Mizoram. Welcoming the delegates to the course, Mr V.D. Singh, Officer-in-Charge, said that teacher training should go hand in hand with reform in syllabus, teaching materials and examinations.

The course comprised (i) written English and grammar; (ii) spoken English; and (iii) principles and skills of teaching English as a second language.

The course in written English and grammar included lectures and tutorial classes in grammar as well as the teaching of it. The idea was to explicate grammar as it applied to the written and formal variety of English. Wherever applicable, attention was drawn to the ways in which the formal variety differed from the spoken one. The course in spoken English included a great deal of practice in transcription and the production of sounds. Listening being as important as speaking, the participants were required to listen to recorded versions of several of Shakespeare's plays and some well known poems. All the recordings were professionally made and exposed the participants to different varieties of English.

Rural development

The N.S.S. Unit of Roorkee University has prepared a detailed plan for the overall development of the Majra village and submitted it to Jamna Lal Bajaj Foundation, Bombay. The University will assist the villagers in getting loans from the State Bank for Dairy & other small scale pursuits. Dr. Mansoor Ali (Coordinator), Sri J.B. Sharma, (full time Rural Development Officer) visited the village along with (Bank Manager), Sri B.M. Sant & Sri Prasad (Field Officer) & explained the schemes to the villagers, so that they may take maximum benefit from this new scheme.

Rs 10 lakhs for youth adventure programmes

The Ministry of Education and Culture has set apart Rs 10 lakhs this year to encourage youth to

undertake activities like mountaineering, trekking, sailing, raft-expedition, cycling, skiing and skating.

Under its scheme for promotion of adventure among the youth, financial assistance is given to individuals, groups, voluntary organisations, educational institutions, Nebru Yuvak Kendras, State Governments and Union Territory Administration.

The budget allocation of Rs 9 lakhs was utilised last year in assisting 90 adventure programmes.

The objective is to foster among the youth a spirit of adventure and team-work apart from providing a creative outlet. The accent is on providing opportunities to non-student youth, particularly of rural areas and those belonging to the weaker sections of the society.

Bombay plans new study courses

The Bombay University is to expand its whole range of courses. Prof Ram Joshi, Vice-Chancellor, while addressing the silver jubilee celebrations of the Bombay Insurance Institute said that he would be willing to introduce certain diploma courses in insurance. The university would examine the scope for similar courses at the undergraduate and post-graduate levels in other areas as well. Prof. Joshi was in favour of diversification of courses. He agreed with the general criticism that the present day educational pattern was quite irrelevant to the needs of the society. He said the proper management of plus two stage could help overcome this lapse to some degree.

Osmania builds a film library

Osmania University has planned a film library to help supplement teaching. The university has recently acquired about 200 educational films on various subjects including environmental studies, regional and urban development and open university education. It is proposed to lend these 16mm films to colleges for screening from the coming aca-

demical year. The films will be of great help to the adult education centres functioning under the NAEP of the university.

Madras endowment in Sanjay's name

An endowment of Rs. one lakh is being made to Madras University by the Tamil Nadu Congress Committee to provide an annual scholarship in the name of Sbi Sanjay Gandhi for higher studies in aeronautical engineering.

JNTU entitled for UGC grant

It is reported that the University Grants Commission has recognised the Jawaharlal Nehru Technological University, Hyderabad to receive assistance from the central sources under section 12A, of the UGC Act. It may be recalled that JNTU was established on October 2, 1972 and was the first technological university of its kind in the country. Uptil now, the State Government was bearing the entire expenditure of this university which had three engineering centres and a college of fine arts and architecture. It has the jurisdiction all over the State of Andhra.

Mr N. Shanmukha Rao, Vice-Chancellor of the university, said that the university sought Rs nine crores assistance from the UGC. With the recognition of the university by the UGC he was expecting more funds for developing its activities such as construction of hostels, etc. The university is receiving from the State Government a grant of Rs two crores in the Sixth Plan period and a sum of Rs 35 lakhs has already been sanctioned for the construction of hostel buildings for the engineering colleges at Anantapur, Kakinada and Hyderabad.

Rao presents report on engineering education

Prof. B. Ramachandra Rao, Vice-Chairman, University Grants Commission and a member of the Review Committee on Post-graduate Education and Research in Engineering and Technology,

presented the report to Shri B. Shankaranand, Union Education Minister. The twenty member committee which included representatives of industry, educational institutions and Government departments was appointed by the Government of India in June 1978 to review the progress made in Postgraduate education and research in engineering and technology and suggest measures for further development. The Minister pointed out that education, especially scientific and technical, had to be relevant to the prevailing social

needs and therefore needed to be continuously reviewed. He assured the committee that the present government had the political will to give effect to those of the recommendations which may be necessary for the economic development of the country.

Bangalore communication degrees become popular

The Department of Communication of Bangalore University has developed various courses in communication / journalism/ and allied areas. The two degrees—Bachelor of Science in

Communication (B.S.) and Master of Science in Communication (M.S.) would be available to the students for different kinds of careers. Many students who have gone out of the portals of this department have easily fitted into the media world having secured jobs in newspaper offices, advertising agencies, public relations departments and some as teachers in other universities. The department would soon be acquiring a sound studio, a photo-lab and a CCTV unit. It also plans to acquire printing lab facilities.

Hundred Years of Science and Technology

(Continued from page 378)

K.S. Krishnan. In some ways he was just the opposite in personality to Raman. He was gentle, cultured, well read, broadminded and very tolerant. I recall on several occasions how Krishnan as Member of the Atomic Energy Commission influenced by his quiet persuasion a stronger personality like Homi Bhabha on various decisions of long standing importance concerning our Atomic Energy programme. I also do not recall any occasion in which Krishnan compromised his principles in expressing his views. His concluding statement at the first Indian Atomic Energy Conference (1954) presided over by Nehru to define our atomic energy programme is a document that shows the vision and strength of character.

It is impossible in any reflections on the history of Indian science for the last 100 years to omit the name of Homi Bhabha. Of all the scientists of the period he contributed most to the development of science and technology in all its aspects. The success of Homi Bhabha in a way was as a result of his upbringing and his constant exposure to the West.

Outstanding

Early in his career, he very quickly made his mark in Cambridge and could claim to be one of the outstanding figures in Theoretical Physics at that time. I believe that as a result of some promises he made to his family, it was planned that he would first get himself trained in engineering and then turn towards anything he liked to do. His early training in engineering was of vital importance in his formulation of a science and technology policy.

His strong character together with the support of Nehru helped him to destroy the iron grip of an insensitive administrative system. I recall in one of the many meetings his instructing the Secretariat Officers that they are there to help the scientists at all stages of their work and they should not in any

way come in their way because of some existing rules for which there was no justification.

He kept close touch with the junior workers by his regular attendance at seminars and lectures where he allowed free discussions on all technical issues.

When the first Atomic Reactor 'Apsara' was due to go critical and things were not going too well, he started fuelling the reactor himself which added much to the sense of participation. He was convinced that unless we take risks and encourage indigenous development wherever possible we would never get the freedom of action in building up Indian industry generally and a powerful atomic or space programme in particular.

Bhabha was lucky enough to be at the helm of affairs, when science was considered the most prestigious activity in the 1950s and 1960s. The post-war elevation of science made him an inspired man and I wonder how he would have reacted to the present lack of interest in science in general and Atomic Energy in particular all over the world.

He had expressed many times the fear that good scientific institutions may eventually be swamped due to ineffective methods of selection, career planning and system organisation and had advocated greater autonomy for the institution he had built. His untimely death left this part of the work incomplete.

There are many more scientists of the period to whom I have made no reference and for the sake of completeness I must mention the names of Bhatnagar, Mahalonobis and Sarabhai, who also left their footprints on the Indian scientific scene. We are now an important scientific country of the world, but the co-ordination and inspiration has yet to come and one of the ways of generating this is to examine in great details the work of the great Indian scientists of the last 100 years.

[Courtesy : The Deccan Herald]

A list of Doctoral Theses Accepted by Indian Universities

PHYSICAL SCIENCE

Statistics

1. Habib, Mohamed El-De soky. Some queueing systems with hyper Erlang distribution. Andhra University.

Mathematics

1. Arya, Shashi Prabha. Sum theorems for topological spaces. D.Sc. Meerut University.
2. Balasubramani, M.S. Theory of von Neumann algebras relative to group of automorphisms. University of Madras.
3. Basu, Rabitosht. Some problems on elasticity and plasticity. University of Calcutta.
4. Bhaskaran, R. Functional analysis: A study of Lipschitz function spaces. University of Madras.
5. Choudhary, Arti. A study of integral equations arising in mixed boundary value problems and their applications. Bhopal University.
6. Gupta, Veena. Motions and oscillations of bodies of revolution in a rotating fluid. Meerut University.
7. Konar, Ahutinarayan. Some aspects of atomic scattering. University of Calcutta.
8. Krishnamurthi, P.R. Boundary value problems for higher order differential equations. University of Madras.
9. Nayak, Krishna Chandra. Some results on function spaces and sequence spaces. Sanbalpur University.

Physics

1. Agarwal, Sri Bhagwan. Studies of electrolytic liquids under ultrasonic wave propagation. Meerut University.
2. Chattopadhyay, Debasish. Electron transport in semiconductors. D.Sc. University of Calcutta.
3. Chattopadhyay, Jonaki. Electronic energy bands of heavy solids. University of Calcutta.
4. Datta, Malaybhushan. Studies on the transport properties of solids. University of Calcutta.
5. Kaul, Girdhari Lal. Experimental study of multi-particle production in P-nucleus interactions at ultra high energies. University of Jammu.
6. Krishnan, B. Studies on structural aspects of some biological solids. University of Madras.
7. Manavalan, P. Studies on the conformational stability of peptides and protein molecules. University of Madras.
8. Muthukumarasamy, P. Mossbauer effect studies on some spinal ferrites. University of Madras.
9. Pawar, Bharatsingh Hirasingh. Studies in pulsed lasers. Marathwada University.
10. Sabnis, Shrikant Govind. X-irradiated luminescence, TL, EL and magnetic behaviour of $\text{CaSO}_4 \cdot \text{Sm}$ Bi phosphors. Shivaji University.
11. Saha, Asok. Some studies in nuclear reactions and spectroscopy. University of Calcutta.
12. Sofia Khatun. Study of high energy electron scattering by complex nuclei. University of Calcutta.

Chemistry

1. Agarwal, Ram Kumar. Studies on complexing behaviour of oxygen donor molecules with Th (IV) and Zr (IV). Meerut University.
2. Alaka, Bheri Venkata. Studies on the synthesis of some useful organic substances and their characterisation. Utkal University.
3. Arkasali, Girija Shankarappa. Solution stability constants of some bivalent metal complexes of diphenylcarbazone, diphenylthiocarbazone and related compounds. Karnatak University.
4. Bandyopadhyay, Harihar. Studies on vinyl polymerization. University of Calcutta.
5. Das, Kalipada. A study on the effect of composition and fertility of soil on the productivity and properties of jute fibre. University of Calcutta.

6. Devarajan, R. Syntheses and studies on polymers of some methyl aryloxymethacrylates. University of Madras.
7. Dhyaneswar Rao, C. Studies on metal complexes. Utkal University.
8. Durairaj, K. A study of halide interaction on the coordination of different neutral monodentate ligands with di- and trivalent transition metal ions. University of Madras.
9. Elayaperumal, P. Reactivity of vinyl monomers in free radical polymerization: A kinetic study. University of Madras.
10. Hariharan, S.S. Redox systems involving peroxodiphosphate for vinyl polymerization. University of Madras.
11. Kalyanasundaram, M. Studies in molecular rearrangements. University of Madras.
12. Mohammad Irshad. Studies on alpha-amylases; Preparation and properties of some alpha-amylase regulators in plant storage tissues. Meerut University.
13. Murugesan, M. Studies in the synthesis of pyrrole (2, 3-b) quinolines. University of Madras.
14. Parameswaran, Geetha. (i) Studies in carbocyclic chemistry; and (ii) Studies related to the synthesis of some substituted 4H-thieno (3, 2-b) pyrroles. University of Madras.
15. Patnaik, Dipika. Studies on spectra and useful applications of some heterocyclic compounds. Utkal University.
16. Philip, V.J. Kinetic studies on iodide induced debromination reactions. University of Madras.
17. Rameshwar Dayal. Studies on solubilizing action and physical properties of strontium and nickel soaps. Meerut University.
18. Ray, Paragsinchan. Study of coordination compounds of uranium and their applications: Stereochemical and analytical study. University of Calcutta.
19. Sadanandan, A.K. Radio tracer studies on the efficiency of P-carriers on the yield and nutrition of rice grown on different soil types. Utkal University.
20. Sehgal, Charanjit Kumar. Chemistry of natural products. University of Jammu.
21. Sharma, Saroj. Some functions of refractive index in relation to chemical constitution. Meerut University.
22. Sreeramamurthy, Chalumuri. Analytical studies on the performance of nitrogen sources on the nitrogenous constituents of soil and plant with reference to flue cured tobacco, N. tabacum. Andhra University.
23. Sreenivasulu, M. A study of physico-chemical properties of organic liquid mixtures: Excess volumes, isentropic compressibilities and infrared spectra. Sri Venkateswara University.
24. Thakare, Omkar Bakaram. Studies in some mixed ligand complexes of uranyl (II) and thorium (IV). Nagpur University.
25. Tiwari, Bindu Kumar. Biochemical changes in brain as function of nutrition and age. Meerut University.

Earth Sciences

1. Bisnoi, Om Prakash. A study of climatic water balance parameters in relation to crop planning in Punjab and Haryana. Andhra University.
2. Chandrasekhar, L.H. Geohydrological studies of the Chikkahagari River basin. Bangalore University.
3. Karuna Kumar, Kamda. Studies on some aspects of the energy budget of an agricultural crop. Andhra University.
4. Nagaraja, H.M. Geological studies of the Maestrichtian sediments of Ariyalur area, Tiruchirappalli District, South India: A contribution to the understanding of the upper cretaceous occurring south of Tethys. Bangalore University.
5. Prasada Rao, Gondi Srilakshmi Hari Vara. Some studies on agroclimatic aspects of Rajasthan. Andhra University.
6. Seralathan, Palani Andhy. Studies on texture, mineral

logy, geochemistry of the modern delatic sediments of the Cauvery River, India. Andhra Pradesh.

Engineering

1. Arunachalam, N. Strength and behaviour of composite beams of reinforced concrete and brick masonry. University of Madras.
2. Ghosh, Ranajit Kumar. Studies on frictional losses in some metal deformation processes. University of Calcutta.
3. Jayagopal, L.S. Stability and ultimate strength of slender reinforced concrete wall panels. University of Madras.
4. Khurasia, H.B. Deflection and vibration analysis of annular circular plates. Bhopal University.
5. Sabapathy, N. A computer based system for selection, allocation, monitoring and evaluation of students. University of Madras.
6. Sanyal, Smaran Kumar. Analysis of ferroresonance problem. Sambalpur University.
7. Shivarudrappa, K.B. Studies on dividing manifold flow: Advanced hydraulics, dam construction and irrigation. University of Madras.
8. Vallinayagam, E. Refined power distribution and erosion models for electric discharge machining process. University of Madras.

BIOLOGICAL SCIENCES

Biochemistry

1. Ghosh, Anil Kumar. Submerged fermentation of mushroom. University of Calcutta.
2. Gopalakrishna, Rayudu. On the metabolic role of arginase in normal and tumor tissues. University of Madras.
3. Mozeena Bano. L-asparaginase from green chillies, *Capsicum annum* L. University of Madras.
4. Sachidanandam, P. Mycotoxins: Biochemical studies on the toxin terrein, produced by *Aspergillus terreus*—A common food contaminant. University of Madras.
5. Subramanian, T. Mycotoxins: Biochemical studies on the mycotoxins of *Aspergillus terreus*. University of Madras.
6. Sunitha, I. Investigations of some biochemical changes in the gastro-intestinal tract as a sequel to hyperglycaemia and hyperlipaemia in rabbits. University of Madras.

Botany

1. Biswas, Sita. Cytological and cytochemical investigations on chromosomes of legumes. University of Calcutta.
2. Deshmukh, Subhash Vinayakarao. Cytogenetic studies in *Anethum sowa* Kurz. Nagpur University.
3. Gupta, Dilip. Studies on some aspects of metabolism in wilt disease of *Cicer arietinum* caused by *Fusarium oxysporum* F. ciceri. University of Calcutta.
4. Hiremath, Dasayya Sadashivayya. Cytological and embryological studies in some members of Lactuceae of tribe Cichoriaceae in Compositae. Karnatak University.
5. Indra Singh. Physiology of regulation of sex expression in plants with special reference to Gamma radiation and plant growth substances. Meerut University.
6. Jain, Narendra Kumar. Monographic study of some Indian species of Indigofera. Meerut University.
7. Janaki Bai, Atluri. Air spora of Visakhapatnam. Andhra University.
8. Karan Singh. Abscission studies in *Capsicum annum* L. Meerut University.
9. Kolhe, Ravindra Laxman. Effect of herbicides on the cytomorphology of farm weeds. Nagpur University.
10. Mandal, Sudhendu. Aerobiology of pollen grains in West Bengal in the context of environmental pollution and respiratory allergy. University of Calcutta.
11. Rajendrudu, G. C₄ photosynthetic carbon metabolism in leaves of aromatic grasses, *Cymbopogon* and *Vetiveria*. Sri Venkateswara University.
12. Roy, P.S. Effect of industrial wastes on the ecology of fresh waters of Gorakhpur. University of Gorakhpur.
13. Sankara Rao, K. Embryological studies in Gentianeae. Bangalore University.
14. Santhi Swaroopa, A. Studies in the nitrogen metabolism of *Mestigocladus lanuginosus*. University of Madras.

15. Sreedevi, P. Cytological and biochemical studies on the development of Asclepiadaceae. University of Kerala.
16. Sridharan, V.T. Studies on marine diatoms of the Indian coast. University of Madras.
17. Tijare, Vinayak Rajeshwar. Studies in Asclepiadaceae. Nagpur University.
18. Tyagi, Suruchi. Morphological studies of *Leucas* and *Leonotis*. Meerut University.

Zoology

1. Abdul Rahman, Masood Ahmed. Studies on some fresh water ciliates. Marathwada University.
2. Anasuya, R. Some aspects of age related metabolic changes in selected tissues of frog, *Rana hexadactyla*. Sri Venkateswara University.
3. Bandyopadhyay, Aparna. Digestive system of *Acridothores tristis* (Linn.) and *Lonchura punctulata* (Linn.) and some effects of thiourea and thyroxin administration on digestive organs and digestion. University of Calcutta.
4. Chari, Gopal Chillakamarri. Studies on the embryology of the vespertilionid bat, *Miniopterus schreibersii fuliginosus* Hodgson. Nagpur University.
5. Datta, Mansai. Studies on some aspects of neurosecretion in the central nervous system of earthworm, *Pheretima posthuma*. University of Calcutta.
6. Gnanamani, Golla. Studies on marine cercaria with observations on some life history stages from Andhra Coast. Andhra University.
7. Gupta, Permod Kumar. Toxic effects of two heavy metals, mercury and lead on the digestive system of *Ophioccephalus punctatus* and *Heteropneustes fossilis*. Meerut University.
8. Jagannadha Rao, Y.R.V. Role of parasite complex on the status of *Chilo auricilius* Dugn. as a pest of rice. Utkal University.
9. Kandasamy, C. Studies on some South Indian Psyllids (Psyllidae: Hemiptera: Insecta). University of Madras.
10. Kodarkar, Mohan Shivruprao. Neuroendocrinology of earthworm, *Octochactodes sudershensis*. Marathwada University.
11. Mane, Sadashiv Yashawant. Histochemistry of *Lamellidens consobrinus* Lea. Shivaji University.
12. Rao, B.S. Sensory versus metabolic effects of diet on animals under different nutritional states. Bangalore University.
13. Saha, Anup Kumar. Conspectus and evaluation of the studies on the osteocranium and Weberian apparatus of some Indian ostariophysine fishes. University of Calcutta.
14. Thangavelu, K. Bioecology of some Rhyparochrominae from South India (Lygaeidae: Heteroptera: Insecta). University of Madras.
15. Thirumalai, G. Biology, comparative morphology and host relationships of some pentatomids from South India (Pentatomidae: Hemiptera: Insecta). University of Madras.

Medical Sciences

1. Gnanavenddan, S.G. Studies on the toxicity of *Puccinomyces verioti* Bainier, a common food contaminant. University of Madras.
2. Lakshmanan, S. A quantitative study of the seminiferous epithelium cycle and a morphometric study of the major tissue components of the testis in albino mouse with special reference to the effects of the disturbed blood supply on them. University of Madras.
3. Madhavan, H.N. Role of viruses in myocarditis with special reference to cell mediated immunity in experimental coxsackie B 3 virus myocarditis. University of Madras.
4. Mehta, Harish Chander. Biochemical aspects of malabsorption in maresmees. Maharshi Dayanand University.

Agriculture

1. Bhattacharyya, Paritosh. Effect of organic manures on microbial population and mineralization of nitrogen in nitrogen fixing and phosphate solubilizing power of rice, *Oryza sativa* L, Cv IR-8 rhizosphere. University of Calcutta.
2. Jagmohan Kumar. Comparative study of radiation and chemical mutagenesis in tomato, *Lycopersicon esculentum* Mill. Meerut University.

3. Malik, Krishan Pal. Cytogenetic investigations in hexaploid triticales, Triticale hexaploide Lart. Meerut University.

4. Muralidharan, A. Biomass productivity, plant interactions and economics of inter-cropping in arecanut. University of Agricultural Sciences. Bangalore.

5. Nanjappa, H.V. Crop weed competition and weed control studies in finger millet, Eleusine coracana Gaertn. University of Agricultural Sciences, Bangalore.

6. Raj, J. Role of microorganisms in the release of soil phosphates to plants. University of Agricultural Sciences, Bangalore.

7. Sharma, Ramesh Chand. Stalk rot of cauliflower (Brassica oleracea var. Botrytis) caused by Sclerotinia sclerotiorum (Lib.) de Bary. Himachal Pradesh Krishi Vishva-vidyalaya.

8. Singh, Ramadhin. Studies on the bearing habit,

flowering, fruit drop and fruit development in Bael, Aegle marmelos. Meerut University.

9. Taneja, Sham Lal. Studies on the incidence and management of pink bollworm, Pectinophora gossypiella sound on cotton. Haryana Agricultural University.

10. Varma, Virendra Singh. Irrigational and manurial studies in lentil, Lens esculentus. Meerut University.

Animal Husbandry

1. Chattopadhyay, Anupam. Ringworm in domestic animals and their public health implication. University of Calcutta.

2. Rajamohan, K. Studies on the common ticks affecting livestock in Kerala. Kerala Agricultural University.

3. Sathianesan, V. Studies on certain gastro-intestinal nematodes with special reference to those found in goats. Kerala Agricultural University.

Additions to A.I.U. Library

Aoun, Juana Abood and others. *Management problems in education : Examples from Panama, Mali, Sri Lanka*. Paris, Unesco (c 1977) 22p.

Association for Educational Communications and Technology. Task Force on Definition and Terminology. *Educational Technology : A glossary of terms*. Washington, Author, 1977. 365p.

Beynon, John and others. *Management of educational facilities programmes : A focus on community and participation and self-reliance; Three seminar papers*. Paris, Unesco (c 1977) 24p.

Carr-Hill, Roy A. *System of educational indicators with specific reference to developing countries*. Paris, Unesco. 53p.

Carron, Gabriel. *Some thoughts on the relationship between research and decision-making*. Paris, Unesco (c 1977) 42p.

Dubey, R.K. *Towards democracy and change in education*. Allahabad, Chugh Publications, 1980. xi, 328p.

Eide, Kjell. *Approaches to educational planning in a societal context*. Paris, Unesco. 21p.

El-Ghannam, M.A. and others. *International cooperation in educational administration : views from the four Unesco Regional Offices for Education; Four seminar papers*. Paris, Unesco (c 1977) 28p.

Galbraith, John Kenneth. *Nature of mass poverty*. Cambridge, Harvard University Press, 1979. viii, 150p.

Glesson, Denis, ed. *Identity and structure : Issues in the sociology of education*. Driffield, Nafferton Books, 1977. 212p.

Goble, Norman M. and Porter, James F. *Changing role of the teacher : International perspectives*. Paris, Unesco, 1977. 234p.

Hawkins, Hugh. *Between Harvard and America : The educational leadership of Charles W. Elliot*. New York, Oxford University Press, 1972. xi, 404p.

India. Directorate of Adult Education. *Developing the curriculum for NAEP*. Delhi, Author, 1978. 20p.

India. Ministry of Education of Social Welfare. *National service volunteer scheme*. Delhi, Author, 1979. 12p.

India. University Grants Commission. *Status of teaching of sociology and social anthropology : Pt. 2 Regional Reports*. Delhi, Author, 1979. 260p.

India. University Grants Commission. Task Force on University Continuing Education, 1976. *Emerging fields of*

andragogy in India : Report. Udaipur, Centre for Continuing Education, Seva Mandir, 1976.

Joon-Chien, Doh. *Eastern intellectuals and western solutions : Follower syndrome in Asia*. Sahibabad, Vikas, 1980. ix 156p.

Kalim, M. Siddiq. *Pakistan : An educational spectrum*. Lahore, Arslan Publications, 1978. xi, 223p.

Keay, F.S., rev. *Ancient Indian education : An inquiry into its origin, development, and ideals*. Delhi, Cosmo Publications, 1980. 191p.

Lavakare, P.J. and others, ed. *Scientific cooperation for development : Search for new directions*. Sahibabad, Vikas, 1980. xviii, 216p.

Moulton, Jeanne, rev. *Outline of the educational system in Afghanistan*. Paris, Unesco. 29p.

Paris, OECD. Centre for Educational Research and Innovation. *Conference on developments in recurrent education, 1977. Discussion papers and secretariat synthesis*. Paris, Author, 1977. discontd.

Reiff, Hans. *Role of educational planning in situations of unemployment (raising some major issues)*. Paris, Unesco, 1976. 23p.

Selim, M. and others. *Community participation in the provision of educational facilities : Experiences from Bangladesh, Sudan, Iran*. Paris, Unesco (c 1978) discontd.

Tirhut College of Physical Education, Muzaffarpur. *On to Moscow- 1980 : A national plan for physical education and sports*. Muzaffarpur, Author, 1976. 12p.

Unesco. *Directory of engineering education institutions, Africa, Asia, Latin America*. Paris, Author, 1976. xxii, 340p.

Unesco Regional Conference of Ministers of Education and Those Responsible for Economic Planning in Asia and Oceania, 4th, Colombo, 1978. *Final Report* Paris, 1978. 110p.

University of Delhi. Department of Library Science. *Workshop on computer techniques in information processing, 1980*. Delhi, Author, 1980. discontd.

Venkatasubramanian, K. *Education and economic development in India : Tamil Nadu—A case study*. Delhi, Frank, 1980. xxiii, 287p.

Wall, W.D. *Constructive education for adolescents*, Paris, Unesco (c 1977) xi, 333p.

MARATHWADA AGRICULTURAL UNIVERSITY PARBHANI (MAHARASHTRA STATE) Advertisement No. MAU 1/80

Applications in the prescribed form are invited on or before 11 August 1980 for the following posts in the pay scale mentioned against each post.

Sr. No.	Designation of the post	Pay scale	No. of posts to be filled
1	2	3	4
1.	Comptroller	Rs. 680-40-1000-EB-50-1500/-	1
2.	University Engineer	Rs. 1000-50-1500/-	1
3.	Asso. Dean & Principal, (H.S.)	Rs. 1500-60-1800-100-2000-125/2-2500/-	1
4.	Registrar	Rs. 1100-50-1550-75-1700/-	1
5.	PROFESSOR OR EQUIVALENT		
	(i) Agril Entomology	Rs. 1500-60-1800-100-2000-125/2-2500/-	1
	(ii) Agril Economics	-do-	1
	(iii) Home Science	-do-	2
	(iv) Chief Extn. Edu. Officer	-do-	1
	(v) Deputy Director, Central Farm	-do-	1
6.	ASSOCIATE PROFESSOR OR EQUIVALENT		
	(i) Food Engineering (Tech)	Rs. 1200-50-1300-60-1900/-	1
	(ii) Cereal Technology (Tech)	-do-	1
	(iii) Food Microbiology (Tech)	-do-	1
	(iv) Extension (Vety)	-do-	1
	(v) Surgery (Vety)	-do-	1
7.	ASSISTANT PROFESSOR OR EQUIVALENT		
	(i) Physiology (Vety)	Rs. 700-40-1100-50-1600/-	2
	(ii) Food & Nutrition (Home Sci.)	-do-	1
	(iii) Anatomy (Vety)	-do-	1
	(iv) Horticulture (Agril)	-do-	5
	(v) Agril. Economics	-do-	3
	(vi) Agril. Statistics	-do-	2
	(vii) Gynaecology (Vety)	-do-	1
8.	Medical Officer	Rs. 600-30-750-EB-40-1150/-	1
9.	Assistant Comptroller/Assistant Accounts Officer	-do-	1
10.	Demonstrator (Home Science)	Rs. 500-20-700-25-900/-	1
11.	Veterinary Officer	-do-	2
12.	Agril. Supervisor	Rs. 365-15-500-20-600-Extn-20-760/- (Agril. graduate to start on Rs 410/-)	3
13.	Oil Engine Driver	Rs. 250-7-285-10-385-Extn-10-435/-	1
14.	Electrician	-do-	1
15.	Plumber	-do-	1
16.	Gas Plant Mechanic	-do-	1
17.	Foremen Supervisor	Rs. 365-15-500-20-600-Extn-20-760/-	1
18.	Artist	-do-	1
19.	Fitter-cum-Machinist	Rs. 290-10-390-15-465-Extn-15-540/-	1
20.	Fitter	-do-	1
21.	Carpenter	Rs. 260-10-390-15-420-Extn-15-495/-	1
22.	Blacksmith	-do-	3
23.	Lab. Assistant (Home Science)	-do-	2
24.	Boiler Assistant (Technology)	-do-	1

QUALIFICATIONS

For the post at Sr. No. 1

Essential

At least second class Graduate of a recognised University with experience of Financial and General Administration in a Gazetted or Superior, Supervisory capacity for atleast five years with Government or business or in a University.

OR

A fully Chartered Accountant with atleast three years experience.

For the post at Sr. No. 2

Essential

A. (i) Bachelor's degree in Civil Engineering with atleast second class or 50% marks.

AND

(ii) Atleast five years experience in the execution of Civil works

in a Gazetted or its equivalent post.

OR

B. (i) Diploma in Civil Engineering of a Government recognised institute with atleast second class or 50% marks.

AND

(ii) At least Ten years experience in the execution of Civil works, out of which at least five years should be in the capacity of Gazetted Officer or its equivalent post.

Higher start may be considered in case of deserving candidates.

For the post at Sr. No. 3

Essential

A. (i) Bachelor's degree in Home Science of this University or of any other University/Insti-

tute recognised as such by this University as equivalent thereto in Second class with atleast 45% marks or with minimum C.G.P.A. of 2.25 in four point scale.

AND

(ii) Master's degree in Home Science of this University or of any other University/Institute recognised as such by this University as equivalent thereto in second class with atleast 50% marks or with minimum C.G.P.A. of 2.50 in four point scale.

AND

(iii) Atleast five years experience of teaching and/or research and/or Extension Education after post-graduation in the

field of specialisation as evidenced by the publications in scientific journals of repute and outstanding record of service.

OR

- B. (i) Bachelor's degree in Home Science of this University or of any other University/Institute recognised as such by this University as equivalent thereto in second class with at least 45% marks or with minimum C.G.P.A. of 2.25 in four point scale.

AND

- (ii) Master's degree in Home-Science of this University or of any other University/Institute recognised as such by this University as equivalent thereto in second class with at least 50% marks or minimum C.G.P.A. of 2.50 in four point scale.

AND

- (iii) Doctorate degree in any branch of Home Science.

AND

- (iv) At least five years experience of teaching and/or research and/or Extension Education after post-graduation in the field of specialisation as evidenced by the publications in the scientific journals of repute, and an outstanding record of service.

Desirable

- (i) Doctorate degree in specialised branch of Home-Science.
(ii) Experience of Post-Graduate teaching in Home-Science.
(iii) Familiarity with the modern concepts of organisation, and coordination of teaching and/or Research and/or Extension Education activities in Home Science.
(iv) Knowledge of Marathi.

Note:—Qualifications may be relaxed in the case of candidates otherwise well deserving and available for the post.

For the post at Sr No. 4

Essential

- (i) Bachelor's degree in Arts/Commerce/Science/ Agriculture/ Veterinary Science/Law/Engineering/Public Administration/B. Tech (Food Sciences)/Home Science of any statutory University/Institute.

AND

Experience of teaching and/or Research and/or Extension education/ or Administration atleast for a period of five years.

- (i) In a Class-I or higher post under the Government of India or under any of the State Government.

AND/OR

- (ii) In a post corresponding to or higher than the post of Deputy Registrar under statutory University/or Institute.

For the post at Sr. No. 5(i) & 5(ii)

- (i) Bachelor's degree in Agriculture of this University or a degree of any other University/Institute recognised as such by this University

as equivalent thereto in second class with at least 45% marks/or with minimum C.G.P.A. of 2.25 in four point scale.

AND

- (ii) Master's degree in Agriculture of this University or a degree or diploma of any other University/Institute in the subject recognised as such by this University as equivalent thereto in second class or 50% marks or with minimum C.G.P.A. of 2.50 in four point scale.

AND

- (iii) Atleast five years experience of teaching and/or research and/or extension education after post-graduation in the field of specialisation as evidenced by the published results in scientific journals of repute and outstanding record of service.

Desirable

- (i) Doctorate degree in respective subject or in specialised branch.
(ii) Experience of post-graduate teaching.
(iii) Familiarity with the modern concepts of organisation and co-ordination of teaching and/or research and/or extension education activities in agriculture.

For the post at Sr. No. 5(iii)

Essential

- (i) Bachelor's degree in Home-Science of this University or of any other University/Institute recognised as such by this University as equivalent thereto in second class with at least 45% marks or with minimum C.G.P.A. of 2.25 in the four point scale.

AND

- (ii) Master's degree in Home-Science in (Food and Nutrition/Child Development/Clothing and Textile) of this University or a degree or diploma of any other University/Institute in the subject and recognised as such by this University as equivalent thereto in second class with at least 50% marks or with minimum C.G.P.A. of 2.50 in four point scale.

AND

- (iii) Atleast five years experience of teaching and/or Research and/or Extension Education after Post-Graduation in the field of specialisation as evidenced by the publications in scientific journals of repute and an outstanding record of service.

Desirable

- (i) Doctorate degree in the specialised branch.
(ii) Experience in post graduate teaching in Home Science.
(iii) Familiarity with the modern concepts of organisation, and co-ordination of teaching and/or research and/or extension education activities in Home Science.
(iv) Knowledge of Marathi.

For the Post at Sr. No. 5(iv)

Essential

- (i) Bachelor's of Science degree in Agriculture of this University or a degree of any other University/

Institute recognised as such by this University as equivalent thereto in Second Class or 45% marks or with minimum C.G.P.A. of 2.25 in four point scale.

AND

- (ii) Master of Science degree in Agriculture in respective subject of this University or a degree or diploma of any other University/Institute in the subject and recognised as such by this University as equivalent thereto in Second Class with at least 50% marks or with minimum C.G.P.A. of 2.50 in four point scale.

AND

- (iii) Atleast five years experience of teaching and/or research and/or extension education after post-graduation in the field of specialisation as evidenced by the published results in scientific journals of repute and an outstanding record of service.

Desirable

- (i) Doctorate degree in respective subject or in specialised branch.
(ii) Experience of post-graduate teaching.
(iii) Familiarity with the modern concepts of organisation and co-ordination of teaching and/or research and/or extension activities in Agriculture.

For the post at Sr. No. (v)

- (i) Bachelor's degree in Agriculture and Master's degree in Agril. in Agronomy/Botany/Horticulture/ of this University or of any other University/Institute recognised as such by this University as equivalent thereto, with 45% marks or more.

AND

- (ii) Atleast five years experience of teaching and/or research and/or extension education/Farm Management/Seed Production after post-graduation in the field of agriculture as evidenced by published results in scientific journals of repute and an outstanding record of service.

For the post at Sr. No. 6(i)

Essential

- (a) Bachelor's degree in Agriculture/ Agril. Technology/Agril. Engineering/Food Engineering of this University or of any other University/Institute recognised as such by this University as equivalent thereto with at least 45% marks or 2.25 C.G.P.A. in four point scale.

AND

- (b) Master's degree in Food Engineering of this University or of any other University/Institute recognised as such by this University as equivalent thereto with at least 50% marks or 2.50 C.G.P.A. in four point scale.

AND

- (c) At least three years experience of teaching and/or research and/or extension education after post-graduation in the field of specialisation as evidenced by publication in Scientific journals of repute

and an outstanding record of service.

Desirable

Doctorate degree in specialised branch

Note: Experience relaxable in the case otherwise well deserving candidates.

For the post at Sr. No. 6(ii)

Essential

1. Bachelor's degree in Agriculture/Science/Agril. Technology of this University or of any other University/Institute recognised as such by this University as equivalent thereto with atleast 45% marks or with atleast 2.25 C.G.P.A. in four point scale.

AND

Master's degree in Food Technology/Agril. Technology/Agriculture in the concerned subject of this University or of any other University/Institute recognised as such by this University as equivalent thereto with atleast 50% marks or with atleast 2.50 C.G.P.A. in four point scale.

AND

Atleast three years experience of teaching and/or research and/or extension education after post-graduation in the field of specialisation as evidenced by publications in scientific journals of repute and an outstanding record of service.

OR

2. Bachelor's degree in Agriculture/Science/Agril. Technology of this University or of any other University/Institute recognised as such by this University as equivalent thereto with atleast 45% marks or with atleast 2.25 C.G.P.A. in four point scale.

AND

Master's degree in Science with atleast 50% marks or with atleast 2.50 C.G.P.A. in four point scale with Ph.D. degree in concerned subject.

Desirable

Doctorate degree in concerned subject.

Note: Experience relaxable in case of well deserving candidate.

For the post at Sr. No. 6 (iii)

Essential

1. Bachelor's degree in Agriculture/Science/Agril. Technology/Veterinary/Horticulture/Fisheries of this University or of any other University/Institute recognised as such by this University as equivalent thereto with atleast 45% marks or with atleast 2.25 C.G.P.A. in four point scale.

AND

Masters degree in Food Technology/Agril. Technology in the concerned subject of this University or of any other University/Institute, recognised as such by this University as equivalent thereto with atleast 50% marks or with atleast 2.50 C.G.P.A. in four point scale.

AND

Atleast three years experience of

teaching and/or research and/or extension education after post-graduation in the field of specialisation as evidenced by publications in scientific journals of repute and an outstanding record of service.

OR

2. Bachelor's degree in Agriculture/Science/Agril. Technology/Veterinary/Horticulture/Fisheries of this University or of any other University/Institute recognised as such by this University as equivalent thereto with atleast 45% marks or with atleast 2.25 C.G.P.A. in four point scale.

AND

Master's degree in Science with atleast 50% marks or with atleast 2.50 C.G.P.A. in four point scale with Ph.D. degree in the concerned subject.

Desirable

Doctorate degree in specialised branch.

Note: Experience relaxable in case of well deserving candidate.

For the post at Sr. No. 6(v)

Essential

- A. (i) Bachelor's degree in Veterinary Science of this University or of any other University/Institute and recognised as such by this University as equivalent thereto in Second Class or 45% marks or minimum C.G.P.A. of 2.25 in four point scale.

AND

- (ii) Master's degree in Veterinary Science of this University or a degree of any other University/Institute in the subject and recognised as such by this University as equivalent thereto with atleast 50% marks or minimum C.G.P.A. of 2.50 in four point scale.

AND

- (iii) Atleast three years experience of teaching and/or Research and/or Extension Education after post-graduation in the field of specialisation in Veterinary Science as evidenced by the published results in scientific journals of repute and an outstanding record of service.

Desirable

Doctorate in any of the branches basic to the subject concerned.

For the post at Sr. No. 6 (iv)

Essential

1. Bachelor's degree in Veterinary Science of this University or of any other University/Institute recognised as such by this University as equivalent thereto in Second Class or atleast 45% marks or minimum C.G.P.A. of 2.25 in four point scale.

AND

2. Master's degree in Veterinary Science/Agriculture in the concerned subject or M.Sc. in Extension of this University or of any other University/Institute recognised as such by this University as equivalent thereto with atleast

50% marks or with minimum C.G.P.A. of 2.50 in four point scale.

AND

3. At least three years experience of teaching and/or research and/or extension education after post graduation in the field of specialisation in Extension as evidenced by published results in scientific journals of repute and an outstanding record of service.

Desirable

- (i) Doctorate in any of the branches basic to the subject.
- (ii) Two years service experience after Doctorate in teaching and/or research and/or extension education as evidenced by published results in scientific journals of repute and an outstanding record of service.

For the post at Sr. No. 7(i), 7(iii) & 7(vii).

Essential

- (1) Bachelor's degree in Veterinary Science of this University or of any other University/Institute and recognised as such by this University as equivalent thereto in second class or 45% marks or 2.25 C.G.P.A. in four point scale.

AND

- (2) Master's degree in Veterinary Science of this University or of any other University/Institute in the respective subject and recognised as such by this University as equivalent thereto, with atleast 50% marks or minimum C.G.P.A. of 2.50 in four point scale.

For the post of 7(iv), 7(v)

Essential

- (i) Bachelor's degree in Agriculture of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto in Second Class or 45% marks or with minimum C.G.P.A. of 2.25 in four point scale.

AND

- (ii) Master's degree in Agriculture of this University or a degree of any other University/Institute in respective subjects and recognised as such by this University as equivalent thereto in Second class with atleast 50% marks or with minimum C.G.P.A. of 2.50 in four point scale.

Desirable

- (i) Experience of Post-graduate Teaching and/or research and/or Extension Education.

For the post at Sr. No. 7(vi)

Essential

- (i) Bachelor's degree in Science with Mathematics/Statistics of any University with atleast 45% marks in the aggregate.

OR

- (ii) Bachelor's degree in Agriculture or Veterinary Science of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto with atleast 45% marks in the aggregate or

with the course credit and Internal evaluation system of education with minimum C.G.P.A. of 2.25 in four point scale.

AND

- (ii) Second class Master's degree in Science in Agril/Statistics/Statistics of any University/Institute with papers only or with papers and Research and with atleast 45% marks in the aggregate or with the course credit & Internal Evaluation system of Education.

For the post at Sr. No. 7(ii)

Essential

1. Bachelor's degree in Home-Science/ Agril-Tech/Technology / Agriculture / Science Veterinary / Horticulture/ Fisheries of this University or of any other University/Institute recognised as such by this University as equivalent thereto and/or P.G. diploma in food and Nutrition as recognised by this University with atleast 45% marks of with atleast 2.25 C.G.P.A. in four point scale.

AND

Master's degree in Home-Science/ Agril Tech/Agriculture/Science/ Veterinary/ Horticulture/ Fisheries/ Nutrition of this University or of any other University/Institute recognised as such by this University as equivalent thereto with atleast 50% marks or 2.50 C.G.P.A. in four point scale.

Desirable

- (i) Doctorate degree in the concerned subject.
(ii) Experience of post-graduate teaching and/or research and/or Extension Education.
(iii) Knowledge of Marathi.

For the post at Sr No. 8

Essential

- (i) M.B.B.S. degree recognised by the Medical Council of India.

AND

- (ii) At least two years experience as a Registered medical practitioner.

Desirable

Post-graduate degree in Medicine/ Surgery.

For the post at Sr. No. 9

Essential

At least Second class graduate of a recognised University with experience of financial and general administration in a Gazetted or superior supervisory capacity for atleast three years with Government or business or in a University.

OR

A fully Chartered Accountant with at least two years experience.

For the post at Sr. No. 10

Essential

- A. (i) Bachelor's degree in Home Science of this University or of any other University/Institute recognised as such by this University as equivalent thereto in first class with atleast 60% marks in the aggregate or with minimum C.G.P.A. of 3.00 in four point scale.

OR

- B. (i) Bachelor's degree in Home Science of this University or

of any other University/Institute recognised as such by this University as equivalent thereto in Second Class with atleast 45% marks or with minimum C.G.P.A. of 2.25 in four point scale.

AND

- (ii) Master's degree in Home Science of this University or a degree or diploma of any other University/Institute recognised as such by this University as equivalent thereto in Second Class with atleast 45% marks or with the minimum C.G.P.A. of 2.25 in four point scale.

For the post at Sr. No. 11

Essential

- A. (i) Bachelor of Science degree in Veterinary Science of this University or of any other University/Institute recognised as such by this University as equivalent thereto in first class with atleast 60% marks in the aggregate or minimum C.G.P.A. of 3.00 in four point scale.

OR

- B. (i) Bachelor of Science degree in Veterinary Science of this University or of any other University/Institute recognised as such by this University as equivalent thereto with atleast 45% marks in aggregate or minimum C.G.P.A. of 2.25 in four point scale.

AND

- (ii) Master of Science degree in Veterinary Science of this University or a degree or diploma of any other University/Institute in the subject and recognised as such by this University as equivalent thereto, with atleast 50% marks or minimum C.G.P.A. 2.50 in four point scale.

For the post at Sr. No. 12

Essential

Bachelor's degree in Agriculture of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto in second class/with 45% marks in aggregate or/with minimum C.G.P.A. of 2.50 in four point scale.

For the post at Sr. No. 13

- (i) VIII Standard passed.

AND

- (ii) Oil Engine Training course passed. One years experience in operation maintenance and repairs of oil engine or training/fitting or minor repairs of motor vehicles, including tractors.

For the post at Sr. No. 14

- (i) Certificate from an I.T.I. in the trade of Electrician.
(ii) One year experience in the field.

For the post at Sr. No. 15

- (i) Licence of Municipal Engineering and preferably a diploma in plumbing of I.T.I.

AND

- (ii) Experience of atleast 2 years in Municipality or with any authorised contractor.

AND

- (iii) VIII standard passed.

For the post at Sr. No. 16

- (i) Diploma in the concerned subject from the Government I.T.I.
(ii) Preferably a candidate having special type of training in gas plant.

For the Post at Sr. No. 17

- (i) persons with at least 5 years experience from the department of Agriculture.

OR

- (i) Diploma in concerned subject.

AND

- (ii) Two years experience as foreman supervisor.

For the post at Sr. No. 18

Essential

- (i) Government diploma in Fine Arts from J.J. School of Arts or any other Government institution.

AND

- (ii) Minimum five years experience in Agricultural University and/or Department of Agriculture and/or Government Educational Institution in the field of fine arts.

Desirable

- (i) Good knowledge of developing, enlarging, finishing retouching, colouring of photographs and exhibits.

AND

- (ii) Good knowledge of docustat photocopying, printing, layouts designing and commercial arts.

For the post at Sr. No. 19

- (i) Diploma in concerned subject from The Government recognised I.T.I.
(ii) Two years experience in the trade concerned.

For the post at Sr. No. 20

- (i) Diploma in concerned subject from the Government recognised I.T.I.
(ii) One year experience in the trade concerned.

For the post at Sr. No. 21

Essential

- (i) Government Certificate/Diploma in Carpentry of I.T.I.

AND

- (ii) At least two years experience in Government workshop institute and/or in well known workshop.

For the post at Sr. No. 22

Essential

- (i) Government Certificate/Diploma in Blacksmith of I.T.I.

AND

- (ii) At least two years experience in a Government workshop and/or well known workshop.

For the post at Sr. No. 23

Essential

1. Bachelor's degree in Home Science of this University or of any other University/Institute recognised as such by this University as equivalent thereto with 45% marks in aggregate or minimum C.G.P.A. of 2.00 in four point scale.

OR

2. Should have passed atleast S.S.C. examination or any other examination recognised as equivalent thereto.

AND

3. Diploma in Home Science of this University or of any other University/Institute recognised as equivalent thereto with at least 45% marks or 2.00 C.G.P.A. in four point scale.

For the post at Sr. No. 24

Essential

I.T.I. Diploma/Certificate in the concerned trade.

AND

At least three years experience in the concerned field.

NOTE: The person selected for the post at Sr. No. 4 will be on tenure for a period of five years. Out of this for the first year he will be on probation and after completing probation satisfactorily he will be continued for another four years.

AGE: Age limit as per Govt. of Maharashtra recruitment rules for corresponding similar posts.

Maximum age limit will be relaxable for all posts by 5 years for the candidates belonging to SC/ST/NT/DNT/OBC.

The age limit shall not apply to persons already in service of Central/State Government/this University or any other University/Institute recognised by this University.

Application forms for the posts at Sr. (1) to (9) can be obtained from the Comptroller, Marathwada Agril. University, Parbhani at the cost of Rs. 2/- in the form of crossed Indian Postal Order in the name of Comptroller, Marathwada Agril. University, Parbhani and for these posts applications in the prescribed forms complete in all respect together with Crossed Indian Postal Order of Rs. 8/- in the name of the Comptroller, Marathwada Agril. University, Parbhani as registration fees should reach to the Registrar, Marathwada Agril. University, Parbhani latest by 5.00 p.m. on 11.8.1980.

Application forms for the posts at Sr. No. 10 to 24 can be obtained from the Comptroller, M.A.U., Parbhani free of cost only for unemployed candidates and should be submitted without registration fees to the Registrar, M.A.U., Parbhani latest by 5.00 p.m. on 11.8.1980. Other candidates willing to apply for the post at Sr. No. (10 to 24) will have to obtain prescribed application forms at the cost of Rs. 2/- in the form of Crossed Indian Postal Orders in the name of the Comptroller, MAU, Parbhani and should submit without registration fees to the Registrar, M.A.U., Parbhani latest by 5.00 p.m. on 11.8.1980.

Incomplete applications in any form and these received after prescribe time and date will not be considered and no correspondence thereon will be entertained.

(Continued on last page)

ANDHRA PRADESH AGRICULTURAL UNIVERSITY

ADMINISTRATIVE OFFICE "RAJENDRANAGAR"

HYDERABAD-500020.

Advertisement No. 4/80, dt. 30-6-1930

Applications are invited for the following posts in the Andhra Pradesh Agricultural University.

Applications along with the Registration fee of Rs. 5/- should reach the Registrar on or before 11-8-1980

Post & Scale of pay (1)	No. of posts (2)	Qualifications (3)
1. Associate Professors (Foods & Nutrition) Rs. 1200-50-1300-60-1900 Temporary, but likely to continue.	2	(a) Essential (i) Ph.D. degree or any other equivalent degree in the subject concerned or should have published work of an equally high standard in addition to Master's degree in the subject concerned. (ii) Experience of five years in teaching and/or research and/or extension in the subject concerned (iii) Other things being equal, preference shall be given to persons possessing a basic professional degree in the Faculty concerned.
2. Associate Professor (Home Management) Rs. 1200-1900. Temporary, but likely to continue.	1	(b) Desirable Published research work to credit.
3. Associate Professor (Child Development) Rs. 1200-1900 Temporary, but likely to continue.	1	(a) Essential (i) A Post-Graduate degree in the subject concerned. (ii) Three years experience in teaching and/or Research and/or extension in the subject concerned. Note: Ph.D. degree holders in the subject are exempted from the three years experience.
4. Assistant Professors (Home Management) Rs. 700-1600 Temporary, but likely to continue	2	(b) Desirable (i) A Ph. D. degree in the subject concerned. (ii) Other things being equal, preference shall be given to persons with basic professional degree in the faculty concerned.
5. Assistant Professors (Foods & Nutrition) Rs. 700-1600 Temporary, but likely to continue.	3	1. M.Sc./Ph.D. degree in Bio-Chemistry or Nutrition. 2. Experience: In case of candidates possessing only M.Sc. degree, they should possess at least 3 years of experience in the analysis of Food samples.
6. Assistant Professors (Child Development) Rs. 700-1600 Temporary, but likely to continue.	2	1. M.Sc. in Food Technology. 2. Experience: At least 3 years of experience in formulating testing the new products for consumer acceptability and table quality.
7. Assistant Research Officer (Bio-Chemistry/Nutrition) Rs. 700-40-1100-50-1600 Temporary, but likely to continue.	1	M.Sc. in Foods & Nutrition.
8. Assistant Research Officer (Food Technology) Rs. 700-40-1100-50-1600 Temporary, but likely to continue.	1	M.Sc. in Home Management
9. Junior Scientist (Foods & Nutrition) Consolidated pay of Rs. 900/- p.m. Temporary, but likely to continue.	1	M.Sc. in Textiles & Clothing
10. Junior Scientist (Home Management) Consolidated pay of Rs. 900/- p.m. Temporary, but likely to continue.	1	
11. Junior Scientist (Textiles & Clothing) Consolidated pay of Rs. 900/- p.m. Temporary, but likely to continue.	1	

- (i) Applicants should appear for interview before the selection committee at their own cost.
- (ii) Selected candidates are liable to be transferred to any equivalent post in teaching, research and extension in the University.
- (iii) Selected candidates will be governed by Andhra Pradesh Agricultural University Conditions of Service.

BANARAS HINDU UNIVERSITY

Advertisement No. 11/1980-81

APPLICATIONS are invited for the undermentioned posts in the Centre of Advanced Study in Physical and Mechanical Metallurgy/Special Assistance Programme, Dept. of Metallurgical Engineering, I.T. The Department has the following sophisticated equipment and facilities for supporting research in Physical and Mechanical Metallurgy; (Transmission, Electron microscope, Scanning electron microscope, X-Ray diffractometer, Instron testing machine, Servohydraulic mechanical testing system (under order), Differential scanning calorimeter, Atomic absorption spectrometer, Vacuum induction melting unit and Rolling mill (under installation). Access is available to cryogenic equipment and ICL-19046 computer.

The benefit of Provident Fund/Pension, Dearness Allowances, House Rent Allowances and City Compensatory Allowances are admissible according to University rules. The retirement age of University employees is 60 years. The appointment will be made on two years probation on all permanent posts. Higher starting salary within the grade is admissible to specially qualified and experienced candidates.

Applications will be entertained on the prescribed form duly supported with a Bank Draft or Crossed Indian Postal Orders for Rs. 7.50 in favour of the Registrar, Banaras Hindu University towards the application fee. Application forms alongwith the leaflet of information will be supplied free of cost by the Registrar (Selection Committee Section), Banaras Hindu University, Varanasi-221005 on receipt of Re. 0.65 paise stamped self-addressed envelope of 23 cm x 10 cm size. Candidates called for interview for these posts will be paid actual Railway fare by the Second Class plus reservation charges for sleeper, if paid, and/or actual Bus fare from the present residence both ways by the shortest route as per University rules. No other expenses will be paid.

Application for each post be sent separately alongwith attested copies of certificates in support of the qualifications and experience mentioned in the application and be addressed to the Registrar (Selection Committee Section), Banaras Hindu University, Varanasi-221005.

Incomplete application in any res-

- (iv) Application forms can be had from the Registrar, Andhra Pradesh Agricultural University, Administrative Office, Rajendranagar, Hyderabad-500030 on payment of Rs. 2/- in cash or through postal order UNCROSSED.

T. Narayan Reddy
REGISTRAR

pect will not be entertained for consideration.

Those who are in service should apply through proper channel. M.O. or Cheque will not be accepted towards the application fee.

For the post of Lecturer, other things being equal, preference will be given to Scheduled Caste/Scheduled Tribes candidates who are considered fit.

Applicants may send their bio-data alongwith attested copies of all the certificates and details on plain paper alongwith the application fee of Rs. 7.50 in Bank Draft/I.P.O. to avoid delay in case they do not get the prescribed form in time.

Note: Number of vacancies are tentative and can vary according to needs.

Last date for receipt of application is July 31, 1980.

1. PROFESSOR OF METALLURGY (Physical/Mechanical Metallurgy) (One) (Centre) Grade : Rs. 1500-60-1800-100-2000-125/2-2500.

Qualifications : Essential

(1) A Doctorate Degree based on work in Physical/Mechanical Metallurgy and/or published work of very high standard. (2) A first or second class Master's Degree in Metallurgical Engineering or an equivalent qualification. (3) About ten years experience in responsible position in teaching/research/industry. (4) Experience of having guided research work of a high standard or evidence of original work in Design/Development. (5) Specialisation in one or more of the following areas:—Advanced Metallography; Phase Transformation; Rapid Solidification; Metallic Glasses; Deformation Studies; Fracture Mechanics; Mechanical Processing; Alloy Development.

Desirable

(1) Research publication of outstanding merit. (2) Brilliant academic record. (3) Recognitions/honours at National/International levels. (4) Membership of Professional organisations.

2. READER IN METALLURGY (Physical/Mechanical Metallurgy) (two) (Centre) Grade: Rs. 1200-50-1300-60-1900.

Qualifications : Essential

(1) A Doctorate Degree based on work in Physical/Mechanical Metallurgy or published work of an equally high standard. (2) A first or second class Master's Degree in Metallurgical Engineering or an equivalent qualification. (3) About five years ex-

perience in responsible position in teaching/research industry. (4) Specialisation in one or more of the following areas :—Advanced Metallography; Phase Transformation; Rapid Solidification; Metallic Glasses; Deformation Studies; Fracture Mechanics; Mechanical Processing; Alloy Development.

Desirable

(1) Research publications of outstanding merit. (2) Brilliant academic record. (3) Academic recognition/honours. (4) Membership of professional organisations.

3. LECTURER IN PHYSICAL METALLURGY (One) (under Special Assistance Programme) Grade: Rs. 700-40-1100-50-1600.

Qualifications : Essential

(1) Consistently good academic record with first or high second class (B+) Master's Degree in the subject or an equivalent qualification. (2) Specialisation in one or more of the following areas of research : X-ray/Electron/Field-Ion Metallography; Thermal/Mechanical/Thermomechanical Treatments; Phase Diagrams/Transformations/Stability, Structure and Structural Imperfections; Development of New Materials Techniques/Theories. (3) Some experience in teaching/research/industry.

Desirable

(1) Doctorate Degree in the subject. (2) Some experience in teaching and/or research in the field of Physical Metallurgy.

Note: 1. Those who have applied earlier for the post of Lecturer in Physical Metallurgy in response to our advertisement No. 9/79-80 need not apply again.

2. Those who have obtained Doctor's Degree in the subject concerned will also be considered irrespective of the fact whether they have a Post-Graduate Degree in the subject or not (applicable for all the above posts).

4. SCIENTIFIC OFFICER (One) (Special Assistance Programme)

5. SCIENTIFIC OFFICER (One) (Centre)

Grade: Rs. 700-40-900-EB-40-1100-50-1300.

Qualifications : Essential

(1) Master's Degree in Physical Science or Bachelor's degree in Technology with 2 years work experience or Bachelor's degree in Physical Science with 5 years work experience or Engineering Diploma with 10 years work experience.

Desirable

(1) Work experience in the maintenance and operation of sophisticated equipment in one or more of the following laboratories: (i) Electronic Instrumentation, (ii) Electron Microscopy, (iii) Scanning electron microscopy, (iv) X-Ray equipment, (v) Modern mechanical testing, (iv) Mechanical forming equipment.

(Contd. on back page)

(Continued from previous page)

Note : Those who have applied earlier for the post No. 4 in response to our Advertisement No. 8/79-80 need not apply again.

6. FOREMAN (One) (Centre)
Grade: Rs. 700-40-900-EB-40-1100-50-1300.

Qualifications : Essential

(1) B. Tech. (Met. Engg./Production Eng.) or equivalent with atleast 5 years experience in machining/forming/fabrication or equipment or Engineering Diploma with 10 years experience.

Desirable

(1) Work experience in the management of a workshop. (2) Experience in fabrication of research equipment in Physical/Mechanical Metallurgy.

**UNIVERSITY OF RAJASTHAN
JAIPUR**

Advertisement No. 17/80

Applications are invited (through proper channel in case of those already in employment) so as to reach this office on or before **31-7-1980** on the prescribed form available from the Registrar's office on pre-payment of Rs 4/- (Rs 3/- extra in case required by post) for the undermentioned posts :

Editor for Index India—Rs 1500-60-1800-100-2000.

Essential Qualifications

(a) M.A./M.Sc./M.Com first or second division plus B.Lib.Sc. or Diploma in Library Science (One year's Course) first or second division.

OR

M.Lib.Sc. first or second division plus B.A./B.Sc./B.Com. first or second division.

(b) At least five years experience of Documentation work on a standard indexing service.

(c) Good grounding in colon classification plus ability to expand the schedules for depth classification.

Desirable Qualifications

Five years administrative experience of a University or a Research Library.

Assistant Editor for Index India—Rs 700-40-1100-50-1300.

Essential Qualifications

(a) M.A./M.Com./M.Sc. first or second division plus B.Lib.Sc. or Diploma in Library Sc. (One year's course) first or second division.

OR

M.Lib.Sc. first or second division plus B.A./B.Sc./B.Com. first or second division.

(b) At least three years experience of Documentation work.

(c) Good grounding in Colon Classification.

Desirable Qualifications

(a) At least three years experience of working in a responsible capacity in a University or a Research Library.

(b) Knowledge of proof reading and press work.

Note: Qualifications and experience can be relaxed in respect of internal candidates who have shown exceptional merit in the field of the documentation work.

Benefit of Provident Fund and other allowances will be admissible as per rules of the University. Candidates who had applied for the post of Editor in response to the earlier advertisement No. 12/79 and 1/80 and for the post of Assistant Editor in response to the earlier advertisement No. 12/79 need not apply again. They may intimate to the Registrar by the prescribed date that they are still interested to be considered for the post. Candidates will be called for interview at their own expense. Retired persons need not apply.

**V.D. Qamra
REGISTRAR**

**THE UNIVERSITY OF
BURDWAN**

**RAJBATI : BURDWAN
WEST BENGAL**

Advertisement No. 2.80-81

Dated, 5th July, 1980

Applications are invited for the following posts :

1. Deputy Registrar ... One post
2. Deputy Inspector of Colleges ... One post

Scale of Pay : Rs 1200-50-1300-60-1900 plus dearness and other allowances and pensionary benefits according to the rules of the University.

Educational Qualifications & Experience

(a) Essential

- (i) Uniformly good academic record with a B+ Master's Degree or its equivalent.
- (ii) At least 10 year's experience in a position involving supervision, Control and Planning of Examinations, administration of Colleges or in an Institute of Higher Learning or Government or other academic bodies. At least 5 years of the 10 years' experience should be in higher position of high level administration.

(iii) Age not less than 35 years. Relaxable in case of exceptionally qualified candidates.

(b) Desirable

- (i) A Doctorate Degree or published papers or high standard.

OR

- (ii) Experience of at least 10 years in a fairly senior position in any academic institution like a college or a University or a research organisation.

The choice of the Selection Committee may not necessarily be confined to those who apply formally.

Those who applied earlier need not apply again.

For application form and other information apply to the Registrar with a self-addressed stamped (0.40p.) envelope (9" x 4").

Last date for submission of application with requisite fee of Rs 5/- is **31st July, 1980.**

**A.K. Chaudhuri
REGISTRAR**

MARATHWADA AGRICULTURAL UNIVERSITY

(Continued from page 400)

Reservation of post for SC/ST/NT/DNT/OBC etc. is as per Maharashtra State Government rules

Request for forms must specify the name and Sr. No. of the post accompanied by self-addressed envelope atleast of the size of 23 cm x 10 cm with 0.65 paise stamp adhered to it. Separate applications shall have to be made for separate posts.

If considered necessary by the University the candidate shall have to appear for personal interview in the University's office at Parbhani at candidate's cost.

In the event of large number of applications received in response of this advertisement, to avoid inconvenience to all concerned, at the discretion of the Vice-Chancellor, limited number of candidates may only be invited for interview even though others not invited for interview might be satisfying the prescribed minimum qualifications.

Candidates already in service of Central/State Government or any other Organisations and those in the service of this University should necessarily apply through proper channel forwarding an advance copy to the undersigned. The advance copy should reach latest by 5.00 p.m. on **11 Aug 1980**. The applications to be received through proper channel should reach latest by 5.00 p.m. on **27 Aug 1980**. University will not be responsible for postal delay.

The fact that the posts are advertised does not mean that necessarily all the posts will be filled in.

CANVASSING IN ANY FORM WILL DISQUALIFY THE CANDIDATE, FOR EMPLOYMENT UNDER THIS UNIVERSITY.

**S.T. Kachwe
REGISTRAR**